DIALOG DATABASES - MECHANICAL ENGINEERING DATABASES

```
? show files;ds
File   6:NTIS 1964-2008/Nov W2
         (c) 2008 NTIS, Intl Cpyrght All Rights Res
File   8:Ei Compendex(R) 1884-2008/Oct W3
         (c) 2008 Elsevier Eng.  Info. Inc.
File  14:Mechanical and Transport Engineer Abstract 1966-2008/Oct
         (c) 2008 CSA.
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File  32:METADEX 1966-2008/Oct
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         (c) 2008 CSA.
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         (c) 2008 The Thomson Corp
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         (c) fmt only 2008 Dialog
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          (c) 2008 MIRA Ltd.
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File 108:Aerospace and High Technology Database 1962-2008/Aug
         (c) 2008 CSA.
File 134:Earthquake Engineering Abstracts 1966-2008/Sep
         (c) 2008 CSA.
File 293:Engineered Materials Abstracts 1966-2008/Oct
         (c) 2008 CSA.
File 335:Ceramic Abstracts/World Ceramics Abstracts 1966-2008/Oct
         (c) 2008 CSA.
File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
         (c) 2006 The Thomson Corp

Set     Items   Description
S1      73718   (FLEET OR (GROUP OR PLURALITY OR SEVERAL)(8N)(AIRCRAFT OR -
             AIRPLANES OR PLANES OR AEROPLANES OR (AIR OR AERO)()PLANES))
S2       2669   S1(2S)(DETERMIN? OR ASSESS? OR EVALUAT? OR PREDICT? OR EST-
             IMAT? OR DECISION? OR TEST? OR ANALYS? OR ANALYZ? OR PROBABIL-
             IT?)(8N)(READINESS OR READY OR CONDITION OR AVAILABILITY OR A-
             VAILABLE OR CAPABLE OR PREPAREDNESS OR ABILITY OR ABLE OR CAP-
```

```
             ABILITY)
S3         773   S2(2S)(MISSION? OR FLY OR TRAVEL OR FLIGHT OR ACTIVE)
S4         203   S3(3S)(MECHANICAL? OR TECHNICAL OR FAILURE OR MAINTENANCE?)
S5         116   RD  (unique items)
S6          10   S4(3S)(PROBABILITIES OR PREDICT? OR LIKELIHOOD OR POTENTIAL
                 OR ESTIMAT? OR RISK?)(6N)(FAILURE? ?)
S7           5   RD  (unique items)
? t7/3,k/all
```

7/3,K/1 (Item 1 from file: 6)

DIALOG(R)File 6:NTIS
(c) 2008 NTIS, Intl Cpyrght All Rights Res. All rts. reserv.

1507482 NTIS Accession Number: AD-A219 820/8

Application of Neural Networks to the F/A-18 Engine Condition Monitoring System

(Master's thesis)
Gengo, J. T.
Naval Postgraduate School, Monterey, CA.
Corp. Source Codes: 019895000; 251450
Sep 89 125p
Languages: English Document Type: Thesis
Journal Announcement: GRAI9015
Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.
NTIS Prices: PC A06/MF A01

Neural networks were applied to the Engine Condition and Monitoring System of the F/A-18 aircraft. Due to recent **fleet** experience with compressor blade failures in **flight** , neural networks were applied to three engine conditions, flameout due to compressor failures, normal operating conditions, and low oil pressure conditions. An attempt was made to **predict** compressor **failure** using the neural networks. A back propagation and back propagation/Kohonen network were successfully tested in recognizing the various conditions with data previously unseen by the networks. Both networks demonstrated promise in **predicting failures** although not enough data was **available** for conclusive results. Keywords: Theses; Data acquisition; Fortran; Naval aircraft. (kr)

7/3,K/2 (Item 1 from file: 8) Jeanty - Bad Date (perhaps the references cited on the paper may help)

DIALOG(R)File 8:Ei Compendex(R)
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0017945294 E.I. COMPENDEX No: 20073910824987

Effect of improving accuracy of load monitoring on aircraft probability of failure

Issue Title: 2007 IEEE Aerospace Conference Digest
Macheret, Yevgeny; Koehn, Phillip
Corresp. Author/Affil: Macheret, Y.: Institute for Defense Analyses, 4850 Mark Center Drive, Alexandria, VA 22311
Corresp. Author email: ymachere@ida.org
Author email: pkoehn@ida.org
Conference Title: 2007 IEEE Aerospace Conference

Conference Location: Big Sky, MT United States Conference Date: 20070303-20070310
E.I. Conference No.: 70231
IEEE Aerospace Conference Proceedings (IEEE Aerosp. Conf. Proc.) (United States) 2007, 1585
Publication Date: 20070928
Publisher: Inst. of Elec. and Elec. Eng. Computer Society
ISSN: 1095-323X ISBN: 1424405254; 9781424405251
DOI: 10.1109/AERO.2007.352911
Article Number: 4161668
Document Type: Conference Paper; Conference Proceeding Record Type: Abstract
Treatment: T; (Theoretical)
Language: English Summary Language: English
Number of References: 11

Evaluating **risk** of aircraft **failure** is necessary for scheduling appropriate **maintenance** , avoiding aircraft losses and **mission** failures, maintaining a high level of readiness, and estimating aircraft **fleet** aging. This paper presents the results of calculating aircraft **failure risk** by **estimating** the probability of structural **failure** of F-18 wing attachment bulkheads. Laboratory fatigue-crack growth-test data (published in open literature) are utilized to describe the distribution of initial defects, which is then evolved as a function of applied loads and **flight** hours. The **risk** is calculated as a probability of **failure** (POF) during a single **flight** , and it is shown that the effect of uncertainty in the knowledge of applied **flight** loads on POF is significant. The reported results provide a framework for evaluating benefits of improving accuracy of load-monitoring data and POF. SUP 1...

7/3,K/3 (Item 2 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

0016029374 E.I. COMPENDEX No: 2004298262878
Failure analyses of polymer matrix composite (PMC) honeycomb sandwich joint panels
Yeh, Hsien-Yang; Nguyen, Sean V.; Yeh, Hsien-Liang
Corresp. Author/Affil: Yeh, H.-Y.: Department of Mechanical Engineering, California State University, Long Beach, CA 90840, United States
Corresp. Author email: hyyeh@csulb.edu
Journal of Reinforced Plastics and Composites (J Reinf Plast Compos) (United Kingdom) 2004, 23/9 (923-939)
Publication Date: 20040713
Publisher: SAGE Publications Ltd
CODEN: JRPCD ISSN: 0731-6844
DOI: 10.1177/0731684404033374
Document Type: Article; Journal Record Type: Abstract
Treatment: T; (Theoretical)
Language: English Summary Language: English
Number of References: 8

...behaviors of these test panels. Failure theories such as the Yeh-Stratton, Tsai-Wu, Tsai-Hill, and Maximum Stress and Strain criteria were utilized to **predict** the first ply **failure** and the results were compared with experimental data.

7/3,K/4 (Item 1 from file: 95)
DIALOG(R)File 95:TEME-Technology & Management
(c) 2008 FIZ TECHNIK. All rts. reserv.

01913985 20041104367
Target build life: When knowing the failure rates is just not enough
(Instandhaltungsplanung zur Verlaengerung der Zielhaltbarkeit)
Crocker, John
Logistics Spectrum, v37, n4, pp17-21, 2003
Document type: journal article Language: English
Record type: Abstract
ISSN: 0024-5852

ABSTRACT:
...on the engines. These deals are referred to by various names, the most common are power-by-the-hour (PbtH), total care packages (TCP) or **fleet** hour agreements (FHA). For simplicity, this paper uses FHA. Basically, an FHA means that the operator agrees to pay a fixed price per engine flying ...

...provider (SP) will agree to maintain the engines and guarantee a certain level of 'availability'. Penalties for unacceptable number of delays and cancellations or in- **flight** shut-downs may be included. In order to the SP to make a profit, the revenue has to be less than the cost of the...
...biggest problem facing the SP is determining the expected income or how long the engine can be expected to last before it next needs invasive **maintenance** . There is, as yet, no means **available** to **determine** the inherent mean time between failures (MTBF) of even a part, let alone an engine. Using past data of similar engines and operations, it is possible to make estimates of the scale of the time-to- **failure** distributions. Once these are **estimated** forecasts can be performed. From these the best **maintenance** and support policies can be determined. If different **maintenance** policies are to be considered, then it is essential that the model used can model these different policies realistically. In this paper, the author explains...

...not only likely to lead to a gross over-stocking of the wrong spares but is also likely to lead to the adoption of poor **maintenance** policies. By doing some carefully planned opportunistic **maintenance** , it is possible to significantly increase the expected times between failures without massively increasing the number of spares needed. The real benefits will depend very...

...failures. Increasing the MTBF adds a significant buffer against the risks of delays and cancellations, and is also likely to reduce the number of in- **flight** -shut-downs. If these policies are combined with health and usage monitoring, including oil debris monitoring and performance trending, it should be possible to not...

7/3,K/5 (Item 1 from file: 108)
DIALOG(R)File 108:Aerospace and High Technology Database
(c) 2008 CSA. All rts. reserv.

0001677127 IP ACCESSION NO: N90-24271

Application of neural networks to the F/A-18 engine condition monitoring system (M.S. Thesis)

GENGO, JOSEPHT
Naval Postgraduate School, Monterey, CA.
PUBLICATION DATE: 1989

CONFERENCE:
, UNITED STATES

RECORD TYPE: Abstract
LANGUAGE: ENGLISH
REPORT NO: AD-A219820
FILE SEGMENT: Aerospace & High Technology

ABSTRACT:
Neural networks were applied to the Engine Condition and Monitoring System of the F/A-18 aircraft. Due to recent **fleet** experience with compressor blade failures in **flight** , neural networks were applied to three engine conditions, flameout due to compressor failures, normal operating conditions, and low oil pressure conditions. An attempt was made to **predict** compressor **failure** using the neural networks. A back propagation and back propagation/Kohonen network were successfully tested in recognizing the various conditions with data previously unseen by the networks. Both networks demonstrated promise in **predicting** **failures** although not enough data was **available** for conclusive results. (GRA)

DIALOG BUSINESS METHODS PATENT DATABASES

FULL-TEXT DATABASE TEMPLATE DATABASES

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? show files;ds
File  15:ABI/Inform(R) 1971-2008/Oct 30
         (c) 2008 ProQuest Info&Learning
File  16:Gale Group PROMT(R) 1990-2008/Oct 23
         (c) 2008 Gale/Cengage
File 148:Gale Group Trade & Industry DB 1976-2008/Oct 28
         (c) 2008 Gale/Cengage
File 160:Gale Group PROMT(R) 1972-1989
         (c) 1999 The Gale Group
File 275:Gale Group Computer DB(TM) 1983-2008/Oct 21
         (c) 2008 Gale/Cengage
File 621:Gale Group New Prod.Annou.(R) 1985-2008/Oct 08
         (c) 2008 Gale/Cengage
File   9:Business & Industry(R) Jul/1994-2008/Oct 30
         (c) 2008 Gale/Cengage
File  20:Dialog Global Reporter 1997-2008/Oct 30
         (c) 2008 Dialog
File 610:Business Wire 1999-2008/Oct 31
         (c) 2008 Business Wire.
File 613:PR Newswire 1999-2008/Oct 31
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         (c) 2008 CSA.
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         (c) 2008 San Jose Mercury News
File 636:Gale Group Newsletter DB(TM) 1987-2008/Oct 23
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         (c) 1999 Business Wire
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         (c) 1999 PR Newswire Association Inc
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         (c) 2008 Gale/Cengage
File  75:TGG Management Contents(R) 86-2008/Oct W1
         (c) 2008 Gale/Cengage
File  95:TEME-Technology & Management 1989-2008/Oct W2
         (c) 2008 FIZ TECHNIK
File 348:EUROPEAN PATENTS 1978-200842
         (c) 2008 European Patent Office
File 349:PCT FULLTEXT 1979-2008/UB=20081023|UT=20081016
         (c) 2008 WIPO/Thomson

Set     Items   Description
S1    1235330   (FLEET OR (GROUP OR PLURALITY OR SEVERAL)(8N)(AIRCRAFT OR -
               AIRPLANES OR PLANES OR AEROPLANES OR (AIR OR AERO)()PLANES))
S2      20427   S1(2S)(DETERMIN? OR ASSESS? OR EVALUAT? OR PREDICT? OR EST-
               IMAT? OR DECISION? OR TEST? OR ANALYS? OR ANALYZ? OR PROBABIL-
               IT?)(8N)(READINESS OR READY OR CONDITION OR AVAILABILITY OR A-
               VAILABLE OR CAPABLE OR PREPAREDNESS OR ABILITY OR ABLE OR CAP-
               ABILITY)
S3       5150   S2(2S)(MISSION? OR FLY OR TRAVEL OR FLIGHT OR ACTIVE)
S4       1755   S3(3S)(MECHANICAL? OR TECHNICAL OR FAILURE OR MAINTENANCE?)
S5       1105   RD  (unique items)
```

S6 27 S4(3S)(PROBABILITIES OR PREDICT? OR LIKELIHOOD OR POTENTIAL OR ESTIMAT? OR RISK?)(6N)(FAILURE? ?)
S7 23 RD (unique items)
? t7/3,k/all

7/3,K/1 (Item 1 from file: 15)
DIALOG(R)File 15:ABI/Inform(R)

02857479 579665001
Distributing the train traction power over cars: effects on dependability analyzed based on daily duty cycle
Bifulco, Giovanni; Capozzi, Sebastiano; Fortuna, Sergio; Mormile, Tiziana; Testa, Alred
Compel v23n1 PP: 209-224 2004
ISSN: 0332-1649 JRNL CODE: COPL
WORD COUNT: 3772

...TEXT: the former based on four converters and eight motors, the latter on six converters and 12 motors are compared in terms of service dependability, immobilizing **risks** and expected **failure** entity per day. Simplified Markov models are obtained by means of a proper selection of the most likely states. The models are also extended to represent the case of log-normal distributions for repair times, and are solved separately for **mission** and idle times, by tuning the transition rates with the different duty-cycle stages. Numerical applications give the opportunity of verifying the proposed approach suitability...

...is true for both the amount of energy and the availability required. When designing electrical power systems, in order to fix proper levels of supply **availability** , it is useful to start from quantitative **analyses** of the traction system **availability** , considering some of its internal characteristics, such as the technology adopted for the trains.

For high speed lines, the choice of the train technology is...

...is to use Life Cycle Cost Models. These models have to consider all the main aspects such as the investment costs (set-up, spare components, **maintenance** documentation, training, etc.) and the support costs (energy, preventive and corrective **maintenance** , effects on service quality, etc.) for a defined scenario (number of years, economical parameters, fleet dimensions, kilometers per vehicle and year, etc.).

Among the main...

7/3,K/2 (Item 1 from file: 16)
DIALOG(R)File 16:Gale Group PROMT(R)

12497033 Supplier Number: 135615539 (USE FORMAT 7 FOR FULLTEXT)
Shield in the sky.(laser jammers for civil aircrafts)
Flight International, pNA
August 30, 2005
Language: English Record Type: Fulltext
Document Type: Magazine/Journal; Trade
Word Count: 2099

(USE FORMAT 7 FOR FULLTEXT)

ABSTRACT:
TEXT:
With **flight** testing of military-style laser jammers on airliners to begin this week, debate continues over their suitability for commercial operations as well as the desirability...

...the airlines criticise the DHS for focusing its resources on the development of expensive DIRCM systems, legislation has been introduced in Congress that would require **fleet** -wide installation. And while the airlines lobby for a layered approach to meeting the missile threat, Congress is considering a bill that would require the...
...seized on a report released by Rand in February, in which the research organisation estimated the cost of equipping the 6,800-aircraft US commercial **fleet** at $11.2 million, and projected operating and support costs of $2.1 billion a year once all the systems are installed. While it has...

...military systems, and do not take into account the cost reduction and reliability improvement goals set for the commercial systems by the DHS. Rand's **maintenance** cost **estimates** assume a mean time between **failures** (MTBF) of 800h, based on projected military system reliability. Increasing the MTBF to the DHS target of 3,000h for the commercial system reduces the ...

...set a target of no more than $1 million by the 1,000th system. "The system costs much less than that, installed and ready to **fly** away, including training, **technical** data, aircraft modifications and the pod," says Pledger. "The cost is equivalent to an in- **flight** entertainment or internet system." The projected operating cost is 0.1o per seat mile. "On a 767-sized aircraft flying coast to coast, that's...

...of "B-kit" missile-defeating systems, requiring equipment to be rotated between aircraft. "We still intend to have remove and replace times within standard airliner **maintenance** times," says Dumont. "More important is the ease of **maintenance** replaceability. Low-cost carriers have a 20-30min turn time and we need to fit within that window." The system boxes are located where they can be removed and replaced during standard **maintenance** , he says. "We are sticking with the pod," says Pledger, to minimise the time an aircraft is out of service for modification, which will be performed during heavy **maintenance** . Based on the more than 27 types modified with Northrop's military DIRCM, "to do an installation integral to the aircraft takes that aircraft out...

...bags -- the 2.1m (7ft)-long pod would be fitted using a scissors truck, a process similar to installing an emergency slide, says Pledger. Scheduled **maintenance** of the DIRCM is designed to coincide with airline **maintenance** cycles. "Filters and dessicants, which need to be replaced after several months, are all that are required to maintain the system," he says. **Ready** to **fly** Northrop planned to begin **flight** **testing** its countermeasures system on 29 August, using a FedEx Express Boeing MD-11 modified to mount the DIRCM pod under the rear fuselage. Initial flights...

...aircraft was flown first without the pod, so that we can measure what it is doing to the aircraft," says Pledger. "The first pod to **fly** is

instrumented for aero data, to get the aircraft cleared to **fly** with the real pod." Flights with a functional DIRCM pod installed are to begin early in October, and will include **tests** of the system's **ability** to detect, track and jam shoulder-launched missiles. These will use a missile simulator on the ground at Mojave airport in California. "We will **fly** the aircraft over at different aspects and altitudes, activate the missile warner with the surrogate threat, and measure the output to determine whether the system...

...putting out a signal with adequate strength to defeat the missile," Pledger says. A Northwest Airlines Boeing 747-200 equipped with an identical pod will **fly** later in the year, and **flight** testing is intended to lead to FAA supplemental type certification (STC) of the Northrop system on both aircraft types. First shipment BAE, meanwhile, planned to...

...has been taken out of revenue service and modified with provisions for the DIRCM. Ground tests will begin in the latter part of August and **flight** tests in early September," says Dumont. The first phase of flying will cover the airworthiness testing required for supplemental type certification of BAE's DIRCM...

...the 767. During the second phase, the aircraft will be flown against a threat simulator on the test range at Eglin AFB in Florida to **evaluate** the system's **ability** to defeat missiles. **Flight testing** is to be completed by the end of the year, with both teams to file their reports early in January so that the DHS can...

...involves the installation of pre-production systems from both manufacturers on multiple aircraft types for evaluation of their reliability and maintainability in revenue service with **several** US cargo carriers. Plans call for 20 **aircraft** to be modified and 16 systems to be procured for operational testing, which would last a year and provide data to improve the life-cycle...

7/3,K/3 (Item 2 from file: 16)

12304405 Supplier Number: 134117558 (USE FORMAT 7 FOR FULLTEXT)
Industry Ill-Prepared for Flying In Severe Icing Conditions.
Air Safety Week, pNA
July 18, 2005
Language: English Record Type: Fulltext
Document Type: Newsletter; Trade
Word Count: 745

... not provide adequate warning."
To TransAsia Airways, the ASC recommended improved training for better situational awareness. Specifically, the ASC said, "Enhance pilots of the ATR **fleet** with their training and rating on areas such as awareness, observing indications of severe icing, briefings and workload sharing, emergency procedures, and unusual attitude recovery...

...to the Direction Generale d'Aviation Civile (DGAC), the French regulatory authority, the ASC recommended:

"Proactively develop a more sophisticated icing detection system to enhance **flight** crews' understanding and awareness of icing **condition** (s). **Evaluate** a new system to provide **flight** crews additional warning when (an) aircraft operates in icing environment with autopilot engaged to reduce the **potential risk** of pilot's **failure** of monitoring and maintaining airspeed."

That **failure** was the principal cause of the crash.

The ASC's recommendations are virtually a mirror-image of the National Transportation Safety Board (NTSB) recommendations to the Federal Aviation Administration (FAA). Reducing the dangers from in- **flight** icing are on the NTSB's "Most Wanted" list of safety improvements. The NTSB has characterized as "unacceptable" the FAA's response to its two...

7/3,K/4 (Item 3 from file: 16)
DIALOG(R)File 16:Gale Group PROMT(R)

11028852 Supplier Number: 112362201 (USE FORMAT 7 FOR FULLTEXT)
health check.
Flight International, p32
Jan 13, 2004
Language: English Record Type: Fulltext
Document Type: Magazine/Journal; Trade
Word Count: 1254

... the material to tell us how it feels?"

The Prognosis programme aims to change the paradigm by which aircraft lives are managed. Today, fear of **failure** controls the design and use of aircraft, DARPA says, resulting in large safety margins that reduce performance, limit availability and drive up costs. Fleets of aircraft are managed on the statistical **likelihood** of **failures** occurring. "We inspect 1,000 parts to find the one that is likely to be damaged," says Christodoulou.

Individual capability

DARPA aims to develop technology...

...before a detectable crack has formed, and evolves with time and use in a predictable way. "The programme will attempt to identify the physics of **failure** and the evolution of damage, and **predict** what comes next," says Christodoulou.

At any point in an airframe or engine's life the system will make a **prediction** of its near-term **capability** - "in 10, 100 or 1,000 cycles, not tens of thousands", Christodoulou says - based on **failure** physics and damage evolution models. "The models are imperfect, and will not capture all events, so we will modulate the prediction with interrogation technology that...

...will indicate whether the models are overestimating or underestimating the life remaining on an airframe or engine component.

Instead of a time- or cycle-based **maintenance** regime determining whether an aircraft can **fly** or not **fly** , operators will be able to operate aircraft to the best of their current capabilities. A military commander, for example, could elect to continue flying an...

...speed and altitude profile until repairs can be performed. "The system would enable a local commander to decide which aircraft are most capable of

a **mission** and which are restricted, when on paper they are all the same," says Christodoulou.

A prognosis system integrates several elements: physics-based damage evolution models; global and local state-awareness sensors; and more effective use of existing **flight** and **maintenance** history databases. The basic approach of combining the models, sensors and databases to predict capability is applicable to both civil and military airframes and turbomachinery...

7/3,K/5 (Item 1 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB

05580063 SUPPLIER NUMBER: 11375886 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Radar spots B-2; project funding may dive bomb. (Northrop Corp.-produced B-2 bomber's failure of its stealth capability jeopardizes funding)
Deady, Tim
Los Angeles Business Journal, v13, n37, p15(1)
Sept 16, 1991
ISSN: 0194-2603 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT
WORD COUNT: 883 LINE COUNT: 00066

... failed a test of its stealth capability is a significant setback for the project and further jeopardizes full funding of the controversial aircraft, industry analysts **predict** .

They hesitated to say that the **failure** represents the final curtain for the project. But, coupled with recent events in the Soviet Union, it is going to be increasingly difficult to convince Congress to fund a full **fleet** of 75 B-2s, as requested by the Bush administration, they said.

Stock of Century City-based Northrop fell 9 percent, or $2.50, to...

...of the Air Force Donald Rice that the B-2's radar-evading capability "did not meet the desired levels of performance" during a recent **flight** test.

In 1990, $2.7 billion of Northrop's $5.4 billion in net revenues were from the B-2 contract. About 12,000 Northrop...

7/3,K/6 (Item 1 from file: 9)
DIALOG(R)File 9:Business & Industry(R)

03752702 Supplier Number: 135615539
Shield in the sky.
(laser jammers for civil aircrafts)
Flight International, p NA
August 30, 2005
DOCUMENT TYPE: Journal ISSN: 0015-3710 (United Kingdom)
LANGUAGE: English RECORD TYPE: Fulltext
WORD COUNT: 1937

TEXT:
With **flight** testing of military-style laser jammers on airliners to begin this week, debate continues over their suitability for commercial operations as well as the desirability...

...the airlines criticise the DHS for focusing its resources on the development of expensive DIRCM systems, legislation has been introduced in Congress that would require **fleet** -wide installation. And while the airlines lobby for a layered approach to meeting the missile threat, Congress is considering a bill that would require the...

...seized on a report released by Rand in February, in which the research organisation estimated the cost of equipping the 6,800-aircraft US commercial **fleet** at $11.2 million, and projected operating and support costs of $2.1 billion a year once all the systems are installed. While it has...

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...of "B-kit" missile-defeating systems, requiring equipment to be rotated between aircraft. "We still intend to have remove and replace times within standard airliner **maintenance** times," says Dumont. "More important is the ease of **maintenance** replaceability. Low-cost carriers have a 20-30min turn time and we need to fit within that window." The system boxes are located where they can be removed and replaced during standard **maintenance** , he says. "We are sticking with the pod," says Pledger, to minimise the time an aircraft is out of service for modification, which will be performed during heavy **maintenance** . Based on the more than 27 types modified with Northrop's military DIRCM, "to do an installation integral to the aircraft takes that aircraft out...

...bags -- the 2.1m (7ft)-long pod would be fitted using a scissors truck, a process similar to installing an emergency slide, says Pledger. Scheduled **maintenance** of the DIRCM is designed to coincide with airline **maintenance** cycles. "Filters and dessicants, which need to be replaced after several months, are all that are required to maintain the system," he says. **Ready** to **fly** Northrop planned to begin **flight** **testing** its countermeasures system on 29 August, using a FedEx Express Boeing MD-11 modified to mount the DIRCM pod under the rear fuselage. Initial flights...

...aircraft was flown first without the pod, so that we can measure what it is doing to the aircraft," says Pledger. "The first pod to **fly** is instrumented for aero data, to get the aircraft cleared to **fly** with the real pod." Flights with a functional DIRCM pod installed are to begin early in October, and will include **tests** of the system's **ability** to detect, track and jam shoulder-launched missiles. These will use a missile simulator on the ground at Mojave airport in California. "We will **fly** the aircraft over at different aspects and altitudes, activate the missile warner with the surrogate threat, and measure the output to determine whether the system...

...putting out a signal with adequate strength to defeat the missile," Pledger says. A Northwest Airlines Boeing 747-200 equipped with an identical pod will **fly** later in the year, and **flight** testing is intended to lead to FAA supplemental type certification (STC) of the Northrop system on both aircraft types. First shipment BAE, meanwhile, planned to...

...has been taken out of revenue service and modified with provisions for the DIRCM. Ground tests will begin in the latter part of August and **flight** tests in early September," says Dumont. The first phase of flying will cover the airworthiness testing required for supplemental type certification of BAE's DIRCM...

...the 767. During the second phase, the aircraft will be flown against a threat simulator on the test range at Eglin AFB in Florida to **evaluate** the system's **ability** to defeat missiles. **Flight testing** is to be completed by the end of the year, with both teams to file their reports early in January so that the DHS can...

...involves the installation of pre-production systems from both manufacturers on multiple aircraft types for evaluation of their reliability and maintainability in revenue service with **several** US cargo carriers. Plans call for 20 **aircraft** to be modified and 16 systems to be procured for operational testing, which would last a year and provide data to improve the life-cycle...

7/3,K/7 (Item 1 from file: 20)
DIALOG(R)File 20:Dialog Global Reporter
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64633184 (USE FORMAT 7 OR 9 FOR FULLTEXT)
Director General Civil Aviation of India Recommends Star Navigation's TERRASTAR: Real-Time Monitoring(TM) System for All Scheduled Domestic Airlines in India
CANADA NEWSWIRE
June 02, 2008
JOURNAL CODE: WCNW LANGUAGE: English RECORD TYPE: FULLTEXT
WORD COUNT: 688

(USE FORMAT 7 OR 9 FOR FULLTEXT)

... capabilities of our TERRASTAR: Real-Time Monitoring system. We are very pleased with this opportunity and are looking forward to having our technology provide comprehensive **maintenance** , safety and regulatory compliance support for India's fast growing and dynamic aviation industry, and other airlines around the world."
This press release is available...

7/3,K/8 (Item 2 from file: 20)
DIALOG(R)File 20:Dialog Global Reporter
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54738911
Fed: : Aust to buy 24 advanced new combat aircraft

Max Blenkin, Defence Correspondent
AAP NEWS
March 09, 2007
JOURNAL CODE: WAAP LANGUAGE: English RECORD TYPE: FULLTEXT
WORD COUNT: 1094

... Fighters (JSF), but on concerns that F-111s might start dropping from the skies. "We are determined that under no circumstances will we take the **risk** of an aircraft having an engineering **failure** at mach 1.5 at a very low level," Defence Minister Brendan Nelson said this week when announcing the Super Hornet acquisition. Dr Nelson said...

... will now arrive two years late. The first production JSF only flew in December and subsequent test flights have been wholly successful. Getting aircraft to **fly** is seldom a problem these days. But, as Wedgetail has demonstrated - along with the Australia's Collins submarines, over-the-horizon radar and Seasprite helicopters - complex electronic systems can cause major delays. "The integration of various sensors and systems via the **mission** system software retains the highest **technical** risk for the (JSF) project and is potentially the greatest source of production delays," says Australian Defence Magazine. Lockheed again says JSF software is on...

... with overall total progress of 41 per cent achieved against 42 per cent planned. Assuming JSF arrives on time, Australia will then possess a varied **fleet** of old and new Hornets plus JSF. That would potentially allow early retirement of older Hornets. These first entered RAAF service in 1986 and have been undergoing extensive modernisation with new weapons and **mission** systems. The initial idea was for upgraded Hornets to fill the F-111 strike role post-2010. But acquisition of Super Hornets means they will...

... fourth while Hornet and F-111 are third. Australian pilots are enthusiastic about the Super Hornet. "This aircraft is an absolute joy to operate and **fly** and the aircrew are going to love it," said Group Captain Steve Roberton (Roberton) who recently flew the Super Hornet in the US. "For a...

... much fuel or goes too fast." Yet the Super Hornet acquisition has generated controversy. Labor defence spokesman Joel Fitzgibbon said this was an ad hoc **decision** . It's not programmed in the longterm defence **capability** plan and neither is there $6 billion set aside in defence forward budget estimates. Rather, the government will fund Super Hornet out of consolidated revenue...

7/3,K/9 (Item 3 from file: 20)
DIALOG(R)File 20:Dialog Global Reporter

52763677 (USE FORMAT 7 OR 9 FOR FULLTEXT)
Event Brief of Q3 2006 Ameren Corporation Earnings Conference Call - Part 1

FAIR DISCLOSURE WIRE
November 03, 2006
JOURNAL CODE: WFDW LANGUAGE: English RECORD TYPE: FULLTEXT
WORD COUNT: 4119

...prices for much of AEE's non-rate regulated generation business. 1. AEE has and will continue to actively sell forward and hedge its expected **available** 2007 generation. 2. Targeting to have 85-90%, **estimated** 2007 economic generation committed by the end of 2006, while making meaningful progress hedging forecasted economic generation in 2008 and 2009. 3. Ameren Energy Marketing...

... increases in fuel and purchase power costs during 1H07, due to regulatory lag. 1. Missouri regulated operations will experience higher purchase power expenses and increased **maintenance** costs, due to a scheduled refueling and **maintenance** outage at the Callaway plant in the spring. 6. Expenses: 1. Other OpEx, as well as CapEx, are expected to rise at certain aspects of...

7/3,K/10 (Item 4 from file: 20)
DIALOG(R)File 20:Dialog Global Reporter

49187414 (USE FORMAT 7 OR 9 FOR FULLTEXT)
BRITISH ENERGY PLC Institutional Investor Presentation - Conference Call - Part 1
FAIR DISCLOSURE WIRE
May 12, 2006
JOURNAL CODE: WFDW LANGUAGE: English RECORD TYPE: FULLTEXT
WORD COUNT: 4653

... being made to outage preparation, and it's absolutely fundamental to safe and timely execution. We are moving to a practical approach in equipment liability **failures** , so we can better **predict** the **likelihood** of future problems and also add important knowledge and insight to our investment activities. The key components here in organization -- two senior staff members are...

... Operators and adopted by many other high-performing nuclear utilities. We monitor current plant health fore signs of degradation, and I think (indiscernible) results of **maintenance** for effectiveness. We continue to refine **maintenance** programs to improve reliability. This is linked to the asset planning and investment, plant lifetime management, and life extension teams. The results are we are...
... validates our expected improvements. So in summary, last year demonstrated a significant reduction in losses from the previous year. Although largely offset by increased plant **maintenance** work, the year represents a significant improvement in our underlying performance. We are addressing the causes of our losses by a greater focus on outages...

7/3,K/11 (Item 5 from file: 20)
DIALOG(R)File 20:Dialog Global Reporter

48059679 (USE FORMAT 7 OR 9 FOR FULLTEXT)
CTIA Wireless 2006 Exhibitor Profiles
BUSINESS WIRE
March 30, 2006
JOURNAL CODE: WBWE LANGUAGE: English RECORD TYPE: FULLTEXT
WORD COUNT: 11657

... back-up power to tower tenants without the hassle of generator ownership includes design, installation, maintenance, testing and fuel. 3. Ground Resistance Monitoring - the remote **testing** system that automatically trends the condition of a tower grounding system **predicts** future performance and/or **failure** . Please stop by our booth for more information. Company: Semotus Solutions, Inc. Booth/Stand: 4109 Ticker Symbol & Exchange: AMEX:DLK Media Contact: Stephanie Noiseux, 407... experienced engineering staff includes licensed professional engineers that certify the integrity of each VFP structure. Additional services include equipment integration, on site installation, and shelter **maintenance** programs. VFP is recognized throughout the telecommunications industry for its high quality products and attention to customer service. Company: Videx, Inc. Booth/Stand: 5020 Media...
... Lisa Truong-Whitinger Phone: 541-758-0521 E-mail: sales@videx.com Web: www.videx.com Videx manufactures CyberLock electronic cylinders that install into existing **mechanical** lock hardware to restrict and audit access to doors, safes, cabinets, padlocks, and more. Provide access control to remote locations such as cell towers with...service centre repairs and for functional tests in sales outlets. Spectrum analyzers are used for all wireless applications in areas such as antenna and satellite **maintenance** , radiation measurements, general repair and military applications. Willtek's engineering expertise reflects 45 years of skill and experience in radio frequency testing. Willtek is located...

7/3,K/12 (Item 6 from file: 20)
DIALOG(R)File 20:Dialog Global Reporter

38743487
Razorback Vehicles - Final Results
CNF
November 01, 2004
JOURNAL CODE: WRNS LANGUAGE: English RECORD TYPE: FULLTEXT
WORD COUNT: 5049

... its fully opened or closed position and is a huge breakthrough in safety as it eliminates the danger caused by a hydraulic seal or hose **failure** . The product has **potential** widespread application in many areas such as agricultural machinery, industrial equipment, transport equipment and manufacturing plants which use thousands of hydraulic cylinders for automated manufacturing...

... copyright drawings and intellectual property. In addition, the substantial cost of tooling needed to manufacture critical Razorback components; the time and cost of testing and **technical** approvals also represent major barriers to entry for any potential competitor. Our plan remains to outsource all manufacturing of Razorback products and during the past...
... responsible for product design improvements, new product development, the development and current management of the CKD supply logistics process and the supply and management of **technical** documentation and manuals. The Company also maintains a small office in Sydney, for our financial control and corporate administration functions. The Razorback management team is...

... an enthusiastic Razorback management team, who work well together to achieve our objectives. In summary, over the past year, the Company has continued its major **mission** of maximising long-term returns to all shareholders by: a Having an experienced, dedicated and cohesive management team strategically located in various global markets and...

7/3,K/13 (Item 7 from file: 20)
DIALOG(R)File 20:Dialog Global Reporter
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02958745
Year 2000 Wire/Banks Join Forces to Heighten Awareness of Year 2000 Issues
BUSINESS WIRE
September 29, 1998
JOURNAL CODE: WBWE LANGUAGE: English RECORD TYPE: FULLTEXT
WORD COUNT: 1159

... the relationships among banks and their suppliers creates the potential for some inconvenience for consumers, Swift said. But he added that banks are focusing on **potential** points of **failure** and updating contingency plans. Banks will be working with local communities around the country to heighten year 2000 awareness. The year 2000 computer problem was ...

... Corporate Communications 500 Woodward Avenue Detroit, MI 48226 313-222-4732 First Union National Bank Natalie Pruett Corporate Communications Manager Charlotte, NC 704-374-4331 **Fleet** Financial Group James W. Schepker, Vice President Corporate Communications 777 Main Street Hartford, CT 06115 Email: james ...schepker@ **fleet** .com ph: 860-986-7592 Frost National Bank Louis Barton 100 West Houston Street San Antonio, TX 78296 210-220-5307 Harris Bank Pam Kassner...

7/3,K/14 (Item 1 from file: 613)
DIALOG(R)File 613:PR Newswire
(c) 2008 PR Newswire Association Inc. All rts. reserv.

0001671051 I08A0D5E0662D11D9B50693FB2600D44F (USE FORMAT 7 FOR FULLTEXT)
Boeing to End 717 and Recognize 767 USAF Tanker Charge
PR Newswire
Friday, January 14, 2005 T12:39:54Z
JOURNAL CODE: PR LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT
DOCUMENT TYPE: NEWSWIRE
WORD COUNT: 1,031

...negotiated, given the continued delay and now likely re-competition of the contract.
Boeing remains firmly committed to the USAF 767 Tanker program and is **ready** to support its customer in whatever **decision** is made regarding the
recapitalization of the nation's current aerial refueling **fleet** . Boeing used
its own money and received no government funding in development of the USAF 767 Tanker.
The impact of this decision on the 767...

...competition in
the defense, space and commercial areas; continued integration of acquired
businesses; performance issues with key suppliers, subcontractors and
customers; significant disruption to air **travel** worldwide (including
future
terrorist attacks); global trade policies; worldwide political stability;
domestic and international economic conditions; price escalation; the
outcome
of political and legal processes...

...the
U.S. Government or foreign government defense and space budgets;
termination
of government or commercial contracts due to unilateral government or
customer
action or **failure** to perform; legal, financial and governmental **risks**
related
to international transactions; legal proceedings; tax settlements with the
IRS; U.S. Air Force review of previously awarded contracts; and other
economic, political and...

7/3,K/15 (Item 2 from file: 613)
DIALOG(R)File 613:PR Newswire

00915633 20030108CGW017 (USE FORMAT 7 FOR FULLTEXT)
SmartSignal Wins Contract with Delta Air Lines
PR Newswire
Wednesday, January 8, 2003 08:03 EST
JOURNAL CODE: PR LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT
DOCUMENT TYPE: NEWSWIRE
WORD COUNT: 637

...we chose
SmartSignal's solution because of its superior early-detection
functionality
and its cross-OEM monitoring abilities," said Ray Valeika, senior vice
president for **technical** operations, Delta Air Lines. "During the
evaluation
process, we realized the importance of having one solution that could
monitor
any brand of engine. Because our aircraft are fitted with various engine
types, SmartSignal's 'one-stop solution' was exactly what we needed to
monitor
our entire **fleet** effectively. Additionally, this solution will easily
expand
to monitor other **mission** -critical equipment, so the technology's
possibilities
are expansive."
SmartSignal provides real-time, **fleet** -wide, on-wing early warning of
abnormal operating performance of all OEM engine products across operating
modes (take-off, climb, and cruise) in a single...

...and process manufacturing, in addition to aviation.
"We are excited that Delta realizes the value of eCM technology as a
means

to better control the **maintenance** of its engines," said Gary Conkright, chairman, president, and CEO of SmartSignal. "SmartSignal eCM offers competitive advantage by maximizing asset availability and reducing unnecessary costs...

...SmartSignal's early warning detection as providing consistent, ongoing cost savings and competitive differentiation."

About SmartSignal
SmartSignal, based in Lisle, IL, is the leader in **Predictive** Technology. The technology, **available** as an enterprise software solution -- Equipment **Condition** Monitoring (eCM(TM)) -- or as a **predictive** platform for OEMs, helps companies gain unprecedented insight into the health of critical business assets. Through real-time monitoring and **prediction** , companies are **able** to avoid catastrophic **failures** , increase capacity, and improve overall return-on-assets. SmartSignal was recently named one of the top 50 emerging technology companies in Chicago by I-Street...

...Best of Sensors Expo new product "Gold Award". To learn more about SmartSignal's eCM technology for the aviation industry, a white paper entitled, "Enabling **predictive** **maintenance** : Increasing Asset **Availability** in the Aviation Industry" can be downloaded at www.SmartSignal.com for no charge.

CONTACT: John Kerastas
630-829-4000
jkerastas@smartsignal.com
SOURCE SmartSignal...

7/3,K/16 (Item 1 from file: 636)
DIALOG(R)File 636:Gale Group Newsletter DB(TM)
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02497267 Supplier Number: 45016603 (USE FORMAT 7 FOR FULLTEXT)
R&D Notes
Navy News & Undersea Technology, v11, n37, pN/A
Sept 26, 1994
Language: English Record Type: Fulltext
Document Type: Newsletter; Trade
Word Count: 707

... ATD program is to demonstrate, in an operational context, high risk/high payoff technologies for future warfighting. Proposals most likely to make it to the **fleet** will be chosen. The focus is on signature control, automatic threat warning, damage resistance and control, **failure** **prediction** , environmentally robust materials and coatings, surgical destruction of targets, minimal cost per kill, integral weapon battle damage assessment and signature control, extended detection range in...

...are small or disadvantaged businesses. The deadline for responses is Oct. 13 (CBD, 9/22).

Ladar Technology. The Navy wants proposals for the development of **active** electro-optic sensor systems for precision ranging, tracking and 3-D imaging of targets. The objective is innovative, lightweight transmitters and receivers for airborne and...

...Silvergate Ave. Bldg. A33; San Diego, Calif. 92152-5113 (Commerce Business Daily, 9/20).

Electronics Components. The Navy needs interconnected small electronic enclosures composed of **mechanical** , electronic and electrical components, built under military specifications. Contact Mark Lopez at NCCOSC RDTE Div.; Code 02214B; 53570 Silvergate Ave., Bldg. A33; San Diego, Calif...

7/3,K/17 (Item 1 from file: 13)
DIALOG(R)File 13:BAMP

01023922 Supplier Number: 134136760 (USE FORMAT 7 OR 9 FOR FULLTEXT)
Managing Aged Transformers.

Transmission & Distribution World, v 7, n 57, p NA
July 01, 2005
DOCUMENT TYPE: Journal ISSN: 1087-0849 (United States)
LANGUAGE: English RECORD TYPE: Fulltext
WORD COUNT: 2114

(USE FORMAT 7 OR 9 FOR FULLTEXT)

TEXT:
...typical utility asset managers need to consider. Integral to the development of such business case analyses is the ability to project the rate of transformer **failure** of the population at **risk** . In the basic case, this is calculated by convolving the hazard rate function with demographic data as illustrated in Fig. 5.

The convolution is the...
...model, the hazard rate function can be derived for other loading distributions to evaluate the effect of loading levels on population life expectancy and projected **failure** rates for a given demographic distribution. Alternatively, this model can be used to evaluate the value of maintaining insulation systems in good condition or to...

7/3,K/18 (Item 1 from file: 95)
DIALOG(R)File 95:TEME-Technology & Management

01965273 20040409374
Failure analyses of polymer matrix composite (PMC) honeycomb sandwich joint panels
Yeh, HY; Nguyen, SV; Yeh, HL
Dept. of Mech. Engng., California State Univ., Long Beach, US; Dept. of Civil Engng., I-Shou Univ., Kaohsiung County, TW
Journal of Reinforced Plastics and Composites, v23, n9, pp923-939, 2004

Document type: journal article Language: English
Record type: Abstract
ISSN: 0731-6844

ABSTRACT:
The objective of this paper is to investigate the structural behavior and material **failure** characteristics of polymer-matrix composite (PMC) honeycomb sandwich joint panels under several transverse loads which resulted in web bending as typically experienced by **aircraft** wing skin. **Several** PMC honeycomb sandwich joint panels were fabricated as part of the demonstration test elements to provide structural concepts for the high-speed civil transport (HSCT...

...ones. Essential components in the sandwich construction were composite face sheets, honeycomb cores, and core-to-facing bonding material. By statically loaded test elements to **failure** in room temperature, the **test** was designed to simulate **flight** load **condition** of 15 psi fuel over pressurization against the wing spar during supersonic maneuver. Geometric linear and nonlinear finite element models were constructed to simulate the structural behaviors of these test panels. **Failure** theories such as the Yeh-Stratton, Tsai-Wu, Tsai-Hill, and Maximum Stress and Strain criteria were utilized to **predict** the first ply **failure** and the results were compared with experimental data.

7/3,K/19 (Item 2 from file: 95)
DIALOG(R)File 95:TEME-Technology & Management
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01913985 20041104367
Target build life: When knowing the failure rates is just not enough
(Instandhaltungsplanung zur Verlaengerung der Zielhaltbarkeit)
Crocker, John
Logistics Spectrum, v37, n4, pp17-21, 2003
Document type: journal article Language: English
Record type: Abstract
ISSN: 0024-5852

ABSTRACT:
...on the engines. These deals are referred to by various names, the most common are power-by-the-hour (PbtH), total care packages (TCP) or **fleet** hour agreements (FHA). For simplicity, this paper uses FHA. Basically, an FHA means that the operator agrees to pay a fixed price per engine flying ...

...provider (SP) will agree to maintain the engines and guarantee a certain level of 'availability'. Penalties for unacceptable number of delays and cancellations or in- **flight** shut-downs may be included. In order to the SP to make a profit, the revenue has to be less than the cost of the... ...biggest problem facing the SP is determining the expected income or how long the engine can be expected to last before it next needs invasive **maintenance** . There is, as yet, no means **available** to **determine** the inherent mean time between failures (MTBF) of even a part, let alone an engine. Using past data of similar engines and operations, it is possible to make estimates of the scale of the time-to- **failure** distributions. Once these are **estimated** forecasts can be performed. From these the best **maintenance** and support policies can be determined. If different

maintenance policies are to be considered, then it is essential that the model used can model these different policies realistically. In this paper, the author explains...

...not only likely to lead to a gross over-stocking of the wrong spares but is also likely to lead to the adoption of poor **maintenance** policies. By doing some carefully planned opportunistic **maintenance** , it is possible to significantly increase the expected times between failures without massively increasing the number of spares needed. The real benefits will depend very...

...failures. Increasing the MTBF adds a significant buffer against the risks of delays and cancellations, and is also likely to reduce the number of in- **flight** -shut-downs. If these policies are combined with health and usage monitoring, including oil debris monitoring and performance trending, it should be possible to not...

7/3,K/20 (Item 1 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

01655179 **Image available**
METHOD AND APPARATUS FOR ANALYZING SURVEILLANCE SYSTEMS USING A TOTAL SURVEILLANCE TIME METRIC
PROCEDE ET APPAREIL D'ANALYSE DES SYSTEMES DE SURVEILLANCE EN MESURANT LE TEMPS DE SURVEILLANCE TOTAL
Patent Applicant/Assignee:
NORTHROP GRUMMAN CORPORATION, 1840 Century Park East, Los Angeles, CA 90067, US, US (Residence), US (Nationality), (For all designated states except: US)
Patent Applicant/Inventor:
COLLIPI Thomas Tilden, 4850 Verona Circle, Melbourne, FL 32940, US, US (Residence), US (Nationality), (Designated only for: US)
HARVEY David F, 4862 Verona Circle, Melbourne, FL 32940, US, US (Residence), US (Nationality), (Designated only for: US)
Legal Representative:
LENART Robert P (agent), Pietragallo Bosick & Gordon LLP, One Oxford Centre, 38th Floor, 301 Grant Street, Pittsburgh, PA 15219, US
Patent and Priority Information (Country, Number, Date):
Patent: WO 200851317 A2 20080502 (WO 0851317)
Application: WO 2007US13904 20070614 (PCT/WO US2007013904)
Priority Application: US 2006455394 20060619
Designated States:
(All protection types applied unless otherwise stated - for applications 2004+)
AE AG AL AM AT AU AZ BA BB BG BH BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM DO DZ EC EE EG ES FI GB GD GE GH GM GT HN HR HU ID IL IN IS JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LY MA MD ME MG MK MN MW MX MY MZ NA NG NI NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SK SL SM SV SY TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW
(EP) AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LT LU LV MC MT NL PL PT RO SE SI SK TR
(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG
(AP) BW GH GM KE LS MW MZ NA SD SL SZ TZ UG ZM ZW
(EA) AM AZ BY KG KZ MD RU TJ TM
Publication Language: English

Filing Language: English
Fulltext Word Count: 2986

Fulltext Availability:
  Detailed Description

Detailed Description
... M) metrics for Intelligence, Surveillance and Reconnaissance (ISR) platforms include an indication of the Operational Availability (A0) of system assets, and an indication of the **mission** reliability (MR). Availability is a measure of **fleet** status, for example, the percent of assets available to begin a **mission** . **Mission** reliability is a measure of the probability of successful **mission** completion. A0 and MR are static metrics and do not portray inherent system robustness.

[0005] Operational **availability** is the **prob**ability that a system will be operating or **capable** of operation when required. In the context of an airborne surveillance system, it includes squadron metric-uptime/possessed hours, and approximates a readiness-to-launch...

...status.

[0006] The availability metric is typically used during an operation and support phase of a system's life, and is the same as a **mission** capable (MC) rate. It can also be used in an acquisition phase, but is limited by customer understanding of logistics delay times. A0 does not provide any information about an asset's ability to perform the **mission** .

[0007] The **mission** reliability metric estimates the probability of success for a single **mission** in a single time period. It also **estimates** the average time between **mission** -ending **failures** . **Mission** reliability can be defined as: a measure of the ability of an asset to perform its required **mission** -critical functions for the duration of a specified **mission** ; or the probability that a system can complete its required operational **mission** without an operational **mission** **failure** (OMF). An OMF is a **failure** that prevents the system from performing one or more **mission** -essential functions, or a measure of operational effectiveness that reflects the frequency with which a commander would remove a system from the ongoing **mission** and/or not begin another **mission** .

[0008] Traditional system reliability and maintainability (R&M) metrics for Intelligence, Surveillance and Reconnaissance (ISR) platforms fail to adequately measure the utility of the ISR...

7/3,K/21 (Item 2 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

01482280
ENERGY AND CHEMICAL SPECIES UTILITY MANAGEMENT SYSTEM
SYSTEME DE GESTION DE SERVICES, D'ESPECES CHIMIQUES ET D'ENERGIE
Patent Applicant/Assignee:
  LIGHTRIDGE RESOURCES LLC, 1111 N. Loop West, Suite 200, Houston, TX 77008 , US, US (Residence), US (Nationality), (For all designated states except: US)

Patent Applicant/Inventor:
HURST Roger, 1111 N. Loop West, Suite 200, Houston, TX 77008, US, US (Residence), US (Nationality),
KRITZINGER Johan A, 1111 N. Loop West, Suite 200, Houston, TX 77008, US, US (Residence), ZA (Nationality),
ALLAN Peter, 1111 N. Loop West, Suite 200, Houston, TX 77008, US, US (Residence), US (Nationality),
ELLISON Brent, 1111 N. Loop West, Suite 200, Houston, TX 77008, US, US (Residence), US (Nationality),
KHATER Ajay, 13510 Perthshire Rd., Houston, TX 77079, US, US (Residence), US (Nationality),
Legal Representative:
KNOBLOCH Charles S et al (agent), ARNOLD & FERRERA, L.L.P., 2401 Fountain View, Dr., Suite 630, Houston, TX 77057, US
Patent and Priority Information (Country, Number, Date):
Patent: WO 200728158 A2-A3 20070308 (WO 0728158)
Application: WO 2006US34565 20060905 (PCT/WO US2006034565)
Priority Application: US 2005714038 20050902
Designated States:
(All protection types applied unless otherwise stated - for applications 2004+)
AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HN HR HU ID IL IN IS JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MD MG MK MN MW MX MY MZ NA NG NI NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SK SL SM SV SY TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW
(EP) AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LT LU LV MC NL PL PT RO SE SI SK TR
(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG
(AP) BW GH GM KE LS MW MZ NA SD SL SZ TZ UG ZM ZW
(EA) AM AZ BY KG KZ MD RU TJ TM
Publication Language: English
Filing Language: English
Fulltext Word Count: 175987

Fulltext Availability:
Detailed Description

Detailed Description
... Space / Sco e Real Time Busines telligence Risk A sis Real Time Enterprise Intelli ce Probab Modeling Asset Total Lifecycle Management Enterprise Asset Process ulation **Predictive** Time-to- **failure** Modelin anagernen Develo rrient Fin cial Modeling Predictive Maintenance Management (E1AIVI.--IAS D) Process mt ration Condition Manage ent /"PE-Advisor
Scenarios Mode rig)torinj1j...Excel Steam Properties COM Specification 8 June, 2001 3.42 Maintainability 1. The program source code shall be written with extensive comment to ensure that **maintenance** staff can easily determine the purpose, input and output parameters and any global variables used or changed by each function.

2. Design and maintenance documentation...

7/3,K/22 (Item 3 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

01373802 **Image available**

METHOD AND SYSTEM FOR HEALTH MONITORING OF AIRCRAFT LANDING GEAR

PROCEDE ET SYSTEME DE CONTROLE DE L'ETAT D'UN TRAIN D'ATTERRISSAGE D'AERONEF

Patent Applicant/Assignee:
MESSIER-DOWTY INC, 574 Monarch Avenue, Ajax, Ontario L1S 2GB, CA, CA (Residence), CA (Nationality), (For all designated states except: US)
Patent Applicant/Inventor:
SCHMIDT R Kyle, 537 Carmello Court, Pickering, Ontario L1W 2Z4, CA, CA (Residence), CA (Nationality), (Designated only for: US)
GEDEON Steven A, 207 Old Orchard Grove, Toronto, Ontario M5M 2E6, CA, CA (Residence), CA (Nationality), (Designated only for: US)
Legal Representative:
HEPPELL Victoria A et al (agent), Gowling Lafleur Henderson LLP, Suite 1600, 1 First Canadian Place, 100 King Street West, Tornto, Ontario M5X 1G5, CA

Patent and Priority Information (Country, Number, Date):
Patent: WO 200653433 A1 20060526 (WO 0653433)
Application: WO 2005CA1750 20051118 (PCT/WO CA2005001750)
Priority Application: CA 2487704 20041118
Designated States:
(All protection types applied unless otherwise stated - for applications 2004+)
AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KM KN KP KR KZ LC LK LR LS LT LU LV LY MA MD MG MK MN MW MX MZ NA NG NI NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SM SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW
(EP) AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LT LU LV MC NL PL PT RO SE SI SK TR
(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG
(AP) BW GH GM KE LS MW MZ NA SD SL SZ TZ UG ZM ZW
(EA) AM AZ BY KG KZ MD RU TJ TM
Publication Language: English
Filing Language: English
Fulltext Word Count: 9219

Fulltext Availability:
Detailed Description

Detailed Description

... relates to aircraft landing systems and more particularly to a method and system for determining whether the landing gear is healthy or whether it requires **maintenance** , service and/or replacement. This invention will also determine if the **risk** of a catastrophic **failure** of the landing gear has changed as a result of its in-service operations.

BACKGROUND OF THE INVENTION

The goal of health monitoring technologies is to know at any time, for any aircraft in the **fleet** , the structural integrity of the landing gear, the amount of remaining fatigue life in the landing gear, the landing gear servicing information (such as shock...

...tire pressure and temperature, and brake condition), and the internal status of all on-board electronics and systems related to the landing gear system.

Being **able** to measure and **assess** the safety and integrity of the landing gear and landing gear system is of vital interest to the public safety.

The current process for deciding...

...has had a "hard landing", and thus has compromised the safety and integrity of the landing gear, is based on a subjective assessment by the **flight** crew. Because of the lack of reliable quantitative data, errors are made in this assessment. As a result, an airplane may be grounded unnecessarily, at...

7/3,K/23 (Item 4 from file: 349)

DIALOG(R)File 349:PCT FULLTEXT

00739970

AIRCRAFT MAINTENANCE ALERT APPARATUS AND METHOD OF USING SAME

APPAREIL D'ALERTE MAINTENANCE POUR AVION ET PROCEDE D'UTILISATION D'UN TEL APPAREIL

Patent Applicant/Assignee:
TRANSDIGITAL COMMUNICATIONS CORPORATION, 1800 E. Lambert Road, Suite 230, Brea, CA 92821, US, US (Residence), US (Nationality), (For all designated states except: US)
Patent Applicant/Inventor:
BERTAGNA Richard A, 63-640 Chapelton Drive, Bermuda Dunes, CA 92201, US, US (Residence), US (Nationality), (Designated only for: US)
Legal Representative:
HOKANSON Jon E, Small Larkin, LLP, 18th floor, 10940 Wilshire Boulevard, Los Angeles, CA 90024-3945, US

Patent and Priority Information (Country, Number, Date):
Patent: WO 200052550 A2 20000908 (WO 0052550)
Application: WO 2000US2902 20000205 (PCT/WO US0002902)
Priority Application: US 99118859 19990205
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZA ZW
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG
(AP) GH GM KE LS MW SD SL SZ TZ UG ZW
(EA) AM AZ BY KG KZ MD RU TJ TM
Publication Language: English
Filing Language: English
Fulltext Word Count: 11546

Fulltext Availability:
Detailed Description

Detailed Description
AIRCRAFT **MAINTENANCE** ALERT APPARATUS
AND METHOD OF USING SAME

Technical Field

The present invention relates to **maintenance** of equipment in passenger areas of aircraft, ships, buses, and related vehicles, and in particular relates to **maintenance** of electronic entertainment system components, and other equipment, furnishings, fixtures installed in the passenger cabin of commercial, passenger aircraft.

Back2round Art

Providing in- **flight** passengers with music, movie and video entertainment is an important ingredient of today's commercial business aircraft operations. The flying public has become accustomed to having these services available during **flight** , and they are particularly indispensable during flights of long duration. Trouble free operation of the entertainment systems is a high priority necessity in the highly...

...result in unhappy onboard customers, and equipment reliability in the range of 99% uptime is routinely demanded by the airlines. This places stringent requirements on **maintenance** , trouble shooting and repair processes both on the aircraft and throughout the **fleet** 's entire operating and support systems.

Currently, malfunctions of onboard components of the entertainment system may be detected either through self test procedures activated by ground **maintenance** personnel of a **potential** component problem, or through the actual **failure** of a device which is inunediately brought to the attention of a crew member. Whatever the difficulty, ultimately a **flight** attendant or pilot manually writes up the **failure** in a log book, and upon landing the log book is turned over to the cognizant **maintenance** personnel for action. In the art as presently practiced, there is no advance notice to ground **maintenance** personnel that an aircraft with an entertainment component **failure** or other problem such as in a lavatory, with a passenger seat or in a galley, is about to arrive, and without warning no advance...

...malfunction. With the aircraft at the terminal gate, the repair crew must be notified and advised of the entry in the log book describing the **failure** . **Maintenance** personnel then attempt to diagnose the system and pinpoint the exact inoperable device, check inventory to **determine** if a replacement spare is quickly **available** , obtain the replacement unit and perform the repair, and then test the system to insure that the repair has been successfully completed. This entire sequence...

...time that the aircraft is on the ground for deplaning and replacing of passengers, or while the aircraft is being turned around for a return **flight** . In current practice, the turnaround times for narrowbody commercial passenger aircraft is relatively short, and typically, **maintenance** crews are permitted only about ten minutes in the passenger cabin between when the last passenger from the inbound **flight** departs and when passengers for the outbound **flight** begin arriving in the cabin. With the many other activities which must be simultaneously performed on the aircraft during this short time period of a stop-over or turn-around, the **maintenance** program as presently performed, where information is transmitted on the ground by providing a manually written record or by word of mouth, is both inefficient...

...detected in the equipment; and the capability of transferring, via conventional communication links, to a predetermined ground station, the

information, whereby the appropriate ground-positioned **maintenance** personnel are made aware of specific equipment or component that has a problem, an identification of the problem corresponding to each piece of equipment or component, and the arrival time of the aircraft having the problem(s) to thereby enable the ground **maintenance** personnel to obtain appropriate replacement and/or repair equipment or tools and have them available at the aircraft upon arrival, to thereby more efficiently repair and/or replace the equipment or component having the problem.

Rather than relying on a manually based system of reporting entertainment system component **failure** , the present invention employs on board digital computer within the entertainment system to perform automatic cyclical interrogation of the components of the system while in **flight** , and maintaining a stored register of components in the aircraft that have failed, are inoperable, or otherwise require repair, replacement or cleaning. This register is...

...every component when a problem is detected, and to then store the relevant data in the RAM or hard drive. This data is designated as **Maintenance** Alert Data for the purpose of the present invention.

For example, **Maintenance** Alert Data may be collected by the on board digital computer in several ways, including polling individual system components or by querying the conventional central Bite collection component (i.e., Built-In-Test Equipment integral with system units) or other cabin systems. **Maintenance** Alert Data from the conventional, installed audio multiplexing system which distributes audio programming from a central audio source to each of the passenger seats of...

DIALOG BUSINESS METHODS TEMPLATE DATABASES

ABSTRACT DATABASES

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? show files;ds
File 350:Derwent WPIX 1963-2008/UD=200869
         (c) 2008 Thomson Reuters
File 344:Chinese Patents Abs Jan 1985-2006/Jan
         (c) 2006 European Patent Office
File 347:JAPIO Dec 1976-2007/Dec(Updated 080328)
         (c) 2008 JPO & JAPIO
File 371:French Patents 1961-2002/BOPI 200209
         (c) 2002 INPI.  All rts. reserv.
File   2:INSPEC 1898-2008/Oct W1
         (c) 2008 Institution of Electrical Engineers
File  35:Dissertation Abs Online 1861-2008/Oct
         (c) 2008 ProQuest Info&Learning
File  65:Inside Conferences 1993-2008/Oct 30
         (c) 2008 BLDSC all rts. reserv.
File  99:Wilson Appl. Sci & Tech Abs 1983-2008/Aug
         (c) 2008 The HW Wilson Co.
File 256:TecInfoSource 82-2008/Jan
         (c) 2008 Info.Sources Inc
File 474:New York Times Abs 1969-2008/Oct 30
         (c) 2008 The New York Times
File 475:Wall Street Journal Abs 1973-2008/Oct 29
         (c) 2008 The New York Times
File 583:Gale Group Globalbase(TM) 1986-2002/Dec 13
         (c) 2002 Gale/Cengage
File  23:CSA Technology Research Database 1963-2008/Oct
         (c) 2008 CSA.
File  56:Computer and Information Systems Abstracts 1966-2008/Oct
         (c) 2008 CSA.

Set     Items   Description
S1      62516   (FLEET OR (GROUP OR PLURALITY OR SEVERAL)(8N)(AIRCRAFT OR -
             AIRPLANES OR PLANES OR AEROPLANES OR (AIR OR AERO)()PLANES))
S2       1216   S1(2S)(DETERMIN? OR ASSESS? OR EVALUAT? OR PREDICT? OR EST-
             IMAT? OR DECISION? OR TEST? OR ANALYS? OR ANALYZ? OR PROBABIL-
             IT?)(8N)(READINESS OR READY OR CONDITION OR AVAILABILITY OR A-
             VAILABLE OR CAPABLE OR PREPAREDNESS OR ABILITY OR ABLE OR CAP-
             ABILITY)
S3        379   S2(2S)(MISSION? OR FLY OR TRAVEL OR FLIGHT OR ACTIVE)
S4         82   S3(3S)(MECHANICAL? OR TECHNICAL OR FAILURE OR MAINTENANCE?)
S5         69   RD  (unique items)
S6          7   S5 FROM 350,344,347,371
S7         62   S5 NOT S6
S8         44   S7 NOT PY>2001
S9         44   RD  (unique items)
? t6/3,k/all; t9/3,k/all

 6/3,K/1     (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2008 Thomson Reuters. All rts. reserv.

0017845587  - Drawing available
```

WPI ACC NO: 2008-G66044/200842
XRPX Acc No: N2008-525021
Fleet of vehicle mission and maintenance scheduling method, involves determining alternative allocation of operational allocation of fleet of vehicles, and generating schedule for alternative allocation of fleet of vehicles
Patent Assignee: BOEING CO (BOEI)
Inventor: POBLETE J L; WILLIAMS Z C
Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update
US 20080125933	A1	20080529	US 2006564183	A	20061128	200842 B

Priority Applications (no., kind, date): US 2006564183 A 20061128

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
US 20080125933	A1	EN	20	11	

Original Publication Data by Authority

Argentina

Assignee name & address:
Original Abstracts:
Methods and systems for prognostic condition assessment decision aid of a **fleet** of vehicles are disclosed. In one embodiment, a method includes providing a schedule of **missions** and **maintenance** of a **fleet** of vehicles, comprising receiving data from the **fleet** of vehicles for **missions** and **maintenance** activity, determining **mission** and **maintenance** requirements, processing the received data and requirements to provide an operational allocation the **fleet** of vehicles, determining an alternative allocation of the operational allocation the **fleet** of vehicles, the alternative allocation satisfying at least one operational objective for the **fleet** of vehicles, and generating a schedule for the alternative allocation of the **fleet** of vehicles.
Claims:

6/3,K/2 (Item 2 from file: 350)

0017559278 - Drawing available
WPI ACC NO: 2008-D79720/200827
XRPX Acc No: N2008-296436
Preparation of system health operations analysis model by determining system health operations analyses of respective fleet of vehicles, comparing obtained analyses, and generating system health operations output of system health operations
Patent Assignee: BOEING CO (BOEI)
Inventor: POBLETE J L; WILLIAMS Z C
Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update
US 7349825	B1	20080325	US 2006564129	A	20061128	200827 B

Priority Applications (no., kind, date): US 2006564129 A 20061128

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
US 7349825	B1	EN	21	11	

Alerting Abstract ...and a second fleet of vehicles. The second system health operations analysis includes an alternative health operations system and hypothetical operational data and/or hypothetical **maintenance** data for the second fleet of vehicles. The two system health operations analyses are compared. A system health operations output of two system health operations...

...output of the comparison contains data enabling a determination of the impact of the alternative health operations device on the second fleet of vehicles. The **maintenance** data of the first and/or second fleet of vehicles includes fault forwarding, event horizon, and/or condition based **maintenance** . The two system health operations analyses incorporate actual data relating to an operational **fleet** of vehicles. The first and/or second system health operations analyses include generating assumption data for untested **fleet** characteristic(s) relating to the two fleets of vehicles. It includes production processes and metrics; **mission** processes and metrics; **maintenance** processes and metrics; command and control processes and metrics; and **fleet** management processes and metrics. The generated output includes deriving an optimum health management solution for the first and/or second **fleet** of vehicles. INDEPENDENT CLAIMS are included for...

...analysis comprising an analysis component to compute two system health operations analyses that include an alternative health operations system and prognostic data to anticipate unscheduled **fleet** **maintenance** , a comparator to receive the system health operations analyses and to perform a comparison between the analyses, and an output component to receive the comparison...

...the analyses, where the output of the comparison contains data enabling a determination of the impact of the alternative health operations device on the second **fleet** of vehicles; and computer-readable media comprising computer executable instructions that, when executed, perform a method of health operations analysis, comprising determining system health operations ...

...410, 420 **Fleet**

Original Publication Data by Authority

Argentina

6/3,K/3 (Item 3 from file: 350) Jeanty

0013376637 - Drawing available
WPI ACC NO: 2003-466262/200344
XRPX Acc No: N2003-370872

Aircraft fleet readiness assessing method, involves determining relative states of readiness of Aircraft, based on receipt of mission request and analyzing associated maintenance information
Patent Assignee: BOEING CO (BOEI)
Inventor: BLACK S E; KELLER K J
Patent Family (1 patents, 1 countries)
Patent Application
Number Kind Date Number Kind Date Update
US 20030033178 A1 20030213 US 2001918945 A 20010731 200344 B

Priority Applications (no., kind, date): US 2001918945 A 20010731

Patent Details
Number Kind Lan Pg Dwg Filing Notes
US 20030033178 A1 EN 14 3

Alerting Abstract ...DESCRIPTION OF DRAWINGS - The figure shows the block diagram of the aircraft fleet **readiness assessing** system.

Original Publication Data by Authority

Argentina

Assignee name & address:
Claims:
That which is claimed:1. An automated method of assessing readiness of a fleet of aircraft comprising:receiving at least one mission request including **a** date and a number of aircraft;automatically determining relative states of readiness of a plurality of aircraft of the fleet, **wherein determining** the relative **states** of **readiness** comprises automatically **analyzing** maintenance information associated with **the** plurality of aircraft to **determine** the relative **states** of **readiness** of the plurality of aircraft **on** the **date** of the requested mission; **and** identifying **aircraft that** will **be** capable of performing the requested **mission and** providing respective measures of the relative states of readiness of the aircraft identified **to** be capable of performing the requested **mission**.>

6/3,K/4 (Item 4 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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0010322999 - Drawing available
WPI ACC NO: 2000-637521/200061
XRPX Acc No: N2000-472801
Fault recording and reporting method for aircraft, recording results in an optical quick access recorder
Patent Assignee: MCDONNELL DOUGLAS CORP (MCDD)
Inventor: SUDOLSKY M D
Patent Family (1 patents, 1 countries)
Patent Application
Number Kind Date Number Kind Date Update
US 6115656 A 20000905 US 1997877219 A 19970617 200061 B
US 1999248509 A 19990210

Priority Applications (no., kind, date): US 1997877219 A 19970617; US

1999248509 A 19990210

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
US 6115656	A	EN	19	8	C-I-P of application US 1997877219

Original Publication Data by Authority

Argentina

Assignee name & address:
Original Abstracts:
...landing and read by an appropriate apparatus. From this information a service technician is able to determine whether or not a fault indication recorded during **flight** is in fact a legitimate fault requiring the affected LRU to be removed from the aircraft for further diagnostic testing. The method significantly reduces the...

...LRU data of lesser importance is eliminated from consideration before more important information. The preferred methods minimize on aircraft data interpretation rendering unnecessary on-board **maintenance** processors and technicians for LRU troubleshooting.
Claims:

6/3,K/5 (Item 5 from file: 350)
DIALOG(R)File 350:Derwent WPIX

0008206484 - Drawing available
WPI ACC NO: 1997-310845/199728
Related WPI Acc No: 1997-310871; 1998-558103; 2000-053885
XRPX Acc No: N1997-257472
Mobile satellite system with satellite communication switching office - provides satellite communication between multiple users in virtual network with two mobile earth terminals connected to and registering with mobile satellite system for establishing voice communications via identifier validation
Patent Assignee: AMSC SUBSIDIARY CORP (AMSC-N); CHURAN G G (CHUR-I); KITTIVER C (KITT-I); MOBILE SATELLITE VENTURES LP (MOBI-N); MOTIENT SERVICES INC (MOTI-N); TISDALE W R (TISD-I)
Inventor: BIEGEL C H; CHURAN G G; GARNER W B; KITTIVER C; MODZELESKY E J; THREADGILL M E; TISDALE W R
Patent Family (15 patents, 72 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	
WO 1997020362	A1	19970605	WO 1996US19120	A	19961129	199728	B
AU 199711430	A	19970619	AU 199711430	A	19961129	199741	E
US 5842125	A	19981124	US 19957749	P	19951130	199903	E
			US 1996728227	A	19961010		
US 5850602	A	19981215	US 1996654198	A	19960528	199906	E
US 5926745	A	19990720	US 19957748	P	19951130	199935	E
			US 1996700943	A	19960821		
US 6058307	A	20000502	US 19957742	P	19951130	200029	E
			US 19957748	P	19951130		
			US 19957749	P	19951130		
			US 1997923534	A	19970904		

				US 199822877	A	19980212		
US 6112085	A	20000829	US 19957742	P	19951130	200043	E	
			US 19957749	P	19951130			
			WO 1996US19120	A	19961129			
			US 1997923534	A	19970904			
US 6243580	B1	20010605	US 19957742	P	19951130	200133	E	
			US 19957748	P	19951130			
			US 19957749	P	19951130			
			WO 1996US19120	A	19961129			
			US 1997923534	A	19970904			
			US 199822877	A	19980212			
			US 1999448921	A	19991123			
US 20010012775	A1	20010809	US 19957749	P	19951130	200147	E	
			US 1996728227	A	19961010			
			US 1998133687	A	19980813			
			US 2001796647	A	20010302			
US 6272338	B1	20010807	US 19957749	P	19951130	200147	E	
			US 1996728227	A	19961010			
			US 1998133687	A	19980813			
CA 2217038	C	20010925	CA 2217038	A	19961129	200159	E	
			WO 1996US19120	A	19961129			
US 6343205	B1	20020129	US 19957748	P	19951130	200210	E	
			US 1996700943	A	19960821			
			US 1999267600	A	19990315			
US 6411806	B1	20020625	US 19957742	P	19951130	200246	E	
			US 19957749	P	19951130			
			WO 1996US19120	A	19961129			
			US 1997923534	A	19970904			
			US 2000611713	A	20000706			
US 6529731	B2	20030304	US 19957749	P	19951130	200320	E	
			US 1996728227	A	19961010			
			US 1998133687	A	19980813			
			US 2001796647	A	20010302			
US 6542739	B1	20030401	US 19957742	P	19951130	200324	E	
			US 19957748	P	19951130			
			US 19957749	P	19951130			
			WO 1996US19120	A	19961129			
			US 1997923534	A	19970904			
			US 199822877	A	19980212			
			US 1999448921	A	19991123			
			US 2000679560	A	20001006			

Priority Applications (no., kind, date): US 19957749 P 19951130; US 19957748 P 19951130; US 19957742 P 19951130; US 1996654198 A 19960528; US 1996700943 A 19960821; US 1996728227 A 19961010; WO 1996US19120 A 19961129; US 1997923534 A 19970904; US 199822877 A 19980212; US 1998133687 A 19980813; US 1999267600 A 19990315; US 1999448921 A 19991123; US 2000611713 A 20000706; US 2000679560 A 20001006; US 2001796647 A 20010302

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
WO 1997020362	A1	EN	216	24	

National Designated States,Original: AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE HU IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK TJ TM TR TT UA UG US UZ VN

Regional Designated States,Original: AT BE CH DE DK EA ES FI FR GB GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG

AU	199711430	A	EN	Based on OPI patent WO 1997020362
US	5842125	A	EN	Related to Provisional US 19957749
US	5926745	A	EN	Related to Provisional US 19957748
US	6058307	A	EN	Related to Provisional US 19957742 Related to Provisional US 19957748 Related to Provisional US 19957749 C-I-P of application US 1997923534
US	6112085	A	EN	Related to Provisional US 19957742 Related to Provisional US 19957749 C-I-P of application WO 1996US19120
US	6243580	B1	EN	Related to Provisional US 19957742 Related to Provisional US 19957748 Related to Provisional US 19957749 C-I-P of application WO 1996US19120 C-I-P of application US 1997923534 Continuation of application US 199822877
				Continuation of patent US 6098307 C-I-P of patent US 6112085
US	20010012775	A1	EN	Related to Provisional US 19957749 Continuation of application US 1996728227
				Continuation of application US 1998133687
				Continuation of patent US 5842125
US	6272338	B1	EN	Related to Provisional US 19957749 Continuation of application US 1996728227
				Continuation of patent US 5842125
CA	2217038	C	EN	PCT Application WO 1996US19120 Based on OPI patent WO 1997020362
US	6343205	B1	EN	Related to Provisional US 19957748 Continuation of application US 1996700943
				Continuation of patent US 5926745
US	6411806	B1	EN	Related to Provisional US 19957742 Related to Provisional US 19957749 C-I-P of application WO 1996US19120 Division of application US 1997923534
				Division of patent US 6112085
US	6529731	B2	EN	Related to Provisional US 19957749 Continuation of application US 1996728227
				Continuation of application US 1998133687
				Continuation of patent US 5842125
US	6542739	B1	EN	Related to Provisional US 19957742 Related to Provisional US 19957748 Related to Provisional US 19957749 C-I-P of application WO 1996US19120 C-I-P of application US 1997923534 Continuation of application US 199822877
				Continuation of application US

Continuation of patent US 6058307
C-I-P of patent US 6112085

Original Publication Data by Authority

Argentina

Assignee name & address:
Claims:
...with the capability and availability of space and ground resources to produce frequency plans for the different beams within the system, and defining contingency plans **for** failure situations;a system engineering system engineering at least one of the network subsystems, equipment and software which is needed to expand capacity to meet...

...a system test station (STS) providing at least one of network access capability to support FES commissioning tests and network service diagnostic tests, the STS **being** optionally collocated with and interfaced to the NOC;a group controller subsystem (GCS) incorporating one or multiple group controllers (GC), each GC at least one...

...managing virtual network call processing, performing MET authentication, and providing call accounting, the GC optionally providing satellite bandwidth resources to the NOC for AMS(R) **S** resource provisioning, monitoring the performance of call processing and satellite circuit pool utilization, and performing MET management, commissioning and periodic performance verification testing and database...with the capability and availability of space and ground resources to produce frequency plans for the different beams within the system, and defining contingency plans **for** failure situations;a system engineering system engineering the network subsystems, equipment and software which is needed to expand capacity to meet increases in traffic demands

6/3,K/6 (Item 6 from file: 350)
DIALOG(R)File 350:Derwent WPIX

0007908163 - Drawing available
WPI ACC NO: 1996-427188/199643
XRPX Acc No: N1996-359641
Aircraft weapon station testing system - has interchangeable fixture to operatively interconnect common electronics module with various types of weapon stations
Patent Assignee: HUGHES MISSILE SYSTEMS CO (HUGA); RAYTHEON CO (RAYT)
Inventor: MONK; MONK R; MONK R W; MONK W R; VAN C D P; VAN CLEVE D P
Patent Family (13 patents, 12 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	
EP 733873	A1	19960925	EP 1996301238	A	19960223	199643	B
NO 199601159	A	19960924	NO 19961159	A	19960321	199648	E
AU 199645682	A	19961017	AU 199645682	A	19960222	199649	E
JP 8271192	A	19961018	JP 199668634	A	19960325	199701	E
CA 2169672	A	19960924	CA 2169672	A	19960216	199704	E
US 5614896	A	19970325	US 1995409106	A	19950323	199718	E
TW 309678	A	19970701	TW 1996102579	A	19960302	199741	E

AU 684416	B	19971211	AU 199645682	A	19960222	199807	E
CA 2169672	C	19990914	CA 2169672	A	19960216	200004	E
EP 733873	B1	20000426	EP 1996301238	A	19960223	200025	E
DE 69607882	E	20000531	DE 69607882	A	19960223	200033	E
			EP 1996301238	A	19960223		
ES 2145380	T3	20000701	EP 1996301238	A	19960223	200036	E
NO 313525	B1	20021014	NO 19961159	A	19960321	200275	E

Priority Applications (no., kind, date): US 1995409106 A 19950323

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
EP 733873	A1	EN	17	9	
Regional Designated States,Original: CH DE ES FR GB IT LI					
JP 8271192	A	JA	13		
CA 2169672	A	EN			
US 5614896	A	EN	16	9	
TW 309678	A	ZH			
AU 684416	B	EN			Previously issued patent AU 9645682
CA 2169672	C	EN			
EP 733873	B1	EN			
Regional Designated States,Original: CH DE ES FR GB IT LI					
DE 69607882	E	DE			Application EP 1996301238 Based on OPI patent EP 733873
ES 2145380	T3	ES			Application EP 1996301238 Based on OPI patent EP 733873
NO 313525	B1	NO			Previously issued patent NO 9601159

Original Publication Data by Authority

Argentina

Assignee name & address:
Original Abstracts:
...weapon stations including a first weapon station (12a) and a second weapon station (12b) comprises a common electronics module (14) and a plurality of interchangeable **mechanical** fixtures (16a, 16b). **A** first interchangeable fixture (16a) is operative for interconnecting the common electronics module (14) with the first weapon station (12a). A second interchangeable fixture (16b) is...

...A weapon station **testing** system for testing the **mission readiness** of an **aircraft** (10) having **a plurality of weapon** stations including **a** first weapon station (**12a**) and a second weapon station (12b) comprises a common electronics module (14) and a plurality of interchangeable **mechanical** fixtures (16a, 16b). A first interchangeable fixture (16a) **is** operative for interconnecting the common electronics module (14) with the first weapon station (12a). A second interchangeable fixture (16b) is operative for interconnecting the common...
Claims:

6/3,K/7 (Item 7 from file: 350)

0007110378 - Drawing available
WPI ACC NO: 1995-139486/199518
XRPX Acc No: N1995-109632
Aircraft cockpit conversion system for three member crew to two member crew system - uses relocation of some control instruments without change, or modification of other control instruments and addition of master caution indicator
Patent Assignee: SMITH E (SMIT-I); TAYLOR R (TAYL-I)
Inventor: SMITH E; TAYLOR R
Patent Family (5 patents, 46 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	
WO 1995008474	A1	19950330	WO 1994US10689	A	19940921	199518	B
AU 199478766	A	19950410	AU 199478766	A	19940921	199530	E
EP 719226	A1	19960703	EP 1994929854	A	19940921	199631	E
			WO 1994US10689	A	19940921		
US 5544842	A	19960813	US 1993124976	A	19930921	199638	E
EP 719226	A4	19970226	WO 1994US9621	A	19940824	199728	E

Priority Applications (no., kind, date): US 1993124976 A 19930921
Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
WO 1995008474	A1	EN	54	10	

National Designated States,Original: AT AU BB BG BR BY CA CH CN CZ DE DK ES FI GB HU JP KP KR KZ LK LU LV MG MN MW NL NO NZ PL PT RO RU SD SE SK UA UZ VN
Regional Designated States,Original: AT BE CH DE DK ES FR GB GR IE IT LU MC NL OA PT SE

AU 199478766	A	EN			Based on OPI patent WO 1995008474
EP 719226	A1	EN	54	10	PCT Application WO 1994US10689
					Based on OPI patent WO 1995008474

Regional Designated States,Original: AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL PT SE

US 5544842	A	EN	19	10
EP 719226	A4	EN		

Original Publication Data by Authority

Argentina

Assignee name & address:
Claims:
...includes means for automatically continuously testing for a fault condition and means responsive thereto for attempting to correct for a detected fault condition; and</br>a **mechanical** extension of a manual gear extension operating apparatus to within operable access of a seated first **or** second crew member without modification to an underfloor manual gear apparatus.

9/3,K/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

07768838 INSPEC Abstract Number: A2001-01-8760M-017, B2001-01-7530B-021
Title: European measurements of aircraft crew exposure to cosmic radiation
Author(s): Menzel, H.-G.; O'Sullivan, D.; Beck, P.; Bartlett, D.

Author Affiliation: Radiat. Protection Res., Eur. Comm., Brussels, Belgium
Journal: Health Physics Conference Title: Health Phys. (USA) vol.79, no.5 p.563-7
Publisher: Lippincott Williams & Wilkins,
Publication Date: Nov. 2000 Country of Publication: USA
CODEN: HLTPAO ISSN: 0017-9078
SICI: 0017-9078(200011)79:5L.563:EMAC;1-U
Material Identity Number: P578-2000-018
Conference Title: 34th Annual Meeting of the National Council on Radiation Protection and Measurements: Cosmic Radiation Exposure of Airline Crews, Passengers and Astronauts
Conference Date: 1-2 April 1998 Conference Location: Arlington, VA, USA
Language: English
Subfile: A B
Copyright 2000, IEE
Abstract: For more than 5 y, the European Commission has supported research into scientific and **technical** aspects of cosmic-ray dosimetry at **flight** altitudes in civil radiation. This has been in response to legislation to regard exposure of aircraft crew as occupational, following the recommendations of the International...

... of neutron physics, cosmic-ray physics, and general dosimetry. A detailed set of measurements has been obtained by employing a wide range of detectors on **several** routes, both on subsonic and supersonic **aircraft** . Many of the measurements were made simultaneously by **several** instruments allowing the intercomparison of results. The paper presents a brief overview of results obtained. It demonstrates that the knowledge about radiation fields and on exposure data has been substantially consolidated and that the **available** data provide an adequate basis for dose **assessments** of aircraft crew, which will be legally required in the European Union after 13 May 2000.

9/3,K/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC

07313443 INSPEC Abstract Number: B1999-09-7610-004
Title: IFE availability prediction model
Author(s): Hansen, J.M.
Author Affiliation: Scitor Corp., Colorado Springs, CO, USA
Conference Title: 17th DASC. AIAA/IEEE/SAE. Digital Avionics Systems Conference. Proceedings (Cat. No.98CH36267) Part vol.2 p. G12/1-7 vol.2
Publisher: IEEE, New York, NY, USA
Publication Date: 1998 Country of Publication: USA 2 vol.(xi+xv+1444) pp.
ISBN: 0 7803 5086 3 Material Identity Number: XX-1998-03231
U.S. Copyright Clearance Center Code: 0 7803 5086 3/98/$10.00
Conference Title: 17th DASC. AIAA/IEEE/SAE Digital Avionics Systems Conference. Proceedings
Conference Date: 31 Oct.-7 Nov. 1998 Conference Location: Bellevue, WA, USA
Language: English
Subfile: B

Abstract: Provides the reader with information about a software model designed to **predict availability** of an in- **flight** entertainment (IFE) system. The paper discusses the structure of the model, concept of operations, and future opportunities. The IFE **availability prediction** model has been designed to **assess** IFE system **availability** for a **fleet** of aircraft using a predefined **flight** schedule. This assessment is accomplished by simulating IFE unit failures and the time and resources required in restoring IFE system based on a specified **maintenance** and logistics support system.

9/3,K/3 (Item 3 from file: 2)
DIALOG(R)File 2:INSPEC

06426482 INSPEC Abstract Number: C9701-7460-001
Title: Decision support for airline system operations control and irregular operations
Author(s): Mathaisel, D.F.X.
Author Affiliation: Dept. of Aeronaut. & Astronaut., MIT, Cambridge, MA, USA
Journal: Computers & Operations Research vol.23, no.11 p.1083-98
Publisher: Elsevier,
Publication Date: Nov. 1996 Country of Publication: UK
CODEN: CMORAP ISSN: 0305-0548
SICI: 0305-0548(199611)23:11L.1083:DSAS;1-S
Material Identity Number: C175-96009
U.S. Copyright Clearance Center Code: 0305-0548/96/$15.00+0.00
Language: English
Subfile: C

...Abstract: reports on the application of computer science and operations research in a decision support system for airline system operations control. The application integrates real-time **flight** following, aircraft routeing, **maintenance** , crew management, gate assignment and **flight** planning with dynamic aircraft re-scheduling and **fleet** re-routeing algorithms for irregular operations. The system described in this paper was designed and developed on distributed desktop UNIX workstations, networked through Ethernet TCP/IP communications, with an X Windows Motif graphical user interface. The algorithms help **flight** controllers optimally re-route the aircraft, crews and passengers when operational problems disrupt the execution of the schedule plan. The system includes: real-time, interactive...

... to generate "what-if" solution scenarios. The integrated system is demonstrated by simulating a disruption to a planned schedule and by using one of the **available** tools, a network flow algorithm, to **determine** optimal re-routeing alternatives.

9/3,K/4 (Item 4 from file: 2)
DIALOG(R)File 2:INSPEC

04455629 INSPEC Abstract Number: B89066697

Title: The US Department of Energy's electric vehicle product improvement programme

Author(s): Barber, K.F.; Takagishi, S.K.

Author Affiliation: US DOE, Washington, DC, USA

Journal: Electric Vehicle Developments vol.8, no.2 p.43-6

Publication Date: April 1989 Country of Publication: UK

CODEN: EVDEDJ ISSN: 0141-9811

U.S. Copyright Clearance Center Code: 0141-9811/89/020043-04/$03.00

Language: English

Subfile: B

Abstract: In 1982 the US Department of Energy, in conjunction with a group of **active** electric vehicle site operators, initiated a cost-shared program to test and evaluate new and improved technologies in an effort to resolve some of the **technical** and operational problems that were being experienced by the vehicle users. Over 20 new technologies were tested including battery systems, drivetrain components, battery support systems ...

... improved vehicles. Numerous problems have been identified and resolved since the programs inception in 1982. The improvements have been reflected by a decrease in vehicle **maintenance** and an overall increase in vehicle reliability in the fleets that made full utilization of the available new technologies. However, many of the vehicles are now approaching eight years of service and their value as a field test **fleet** is coming to an end. More advanced technology vehicles are becoming **available** and need to be **evaluated** in a field environment.

9/3,K/5 (Item 5 from file: 2)

DIALOG(R)File 2:INSPEC

03285976 INSPEC Abstract Number: C84032991

Title: System dynamics and conventional approaches for managing technological substitution in national security planning

Author(s): Moussavi, M.; Santoso, I.; Young, S.; Drew, D.

Author Affiliation: Dept. of Civil Engng., Virginia Polytech. Inst. & State Univ., Blacksburg, VA, USA

Conference Title: 1983 Winter Simulation Conference Proceedings p. 679-89 vol.2

Editor(s): Roberts, S.; Banks, J.; Schmeiser, B.

Publisher: IEEE, New York, NY, USA

Publication Date: 1983 Country of Publication: USA 2 vol. (xxi+v+703) pp.

U.S. Copyright Clearance Center Code: CH1953-9/83/0000-0679$01.00

Conference Sponsor: IEEE; ACM; Inst. Ind. Eng.; NBS; ORSA; SCS; TIMS

Conference Date: 12-14 Dec. 1983 Conference Location: Arlington, VA, USA

Language: English

Subfile: C

...Abstract: deal with (1) economy, (2) budget, (3) procurement, (4) attrition, and (5) survivability. The model is illustrated using aircraft-carrier-oriented combat scenarios which include **fleet** defense, counterair, interdiction, and close surface-surface support **missions** for

the carrier-based aircraft. Trade-off analyses are performed to determine the allocations among procurement; operations and **maintenance** ; and research, development, test, and **evaluation** that will generate values of aircraft inventory, **availability** , and survivability that optimize life-cycle costs and kill-to-loss ratios.

9/3,K/6 (Item 6 from file: 2)
DIALOG(R)File 2:INSPEC

02171769 INSPEC Abstract Number: C78008289
Title: Development flight test techniques for digital multimode flight control systems
Author(s): Carleton, D.L.
Author Affiliation: Wright-Patterson AFB, Dayton, OH, USA
Conference Title: AGARD Conference Proceedings no.223 on Flight Test Techniques p.6/1-14
Publisher: AGARD, Neuilly-sur-Seine, France
Publication Date: April 1977 Country of Publication: France v+426 pp.
Conference Sponsor: AGARD
Conference Date: 11-14 Oct. 1976 Conference Location: Porz Wahn, West Germany
Language: English
Subfile: C

Abstract: **Several** attempts have been made to quantify **aircraft** flying qualities in **mission** related tasks. One currently used criteria are those set forth in MIL-F-8785B, 'Flying Qualities of Piloted Aircraft'. A technique that has been recently developed is to **assess** the aircrafts' **ability** to allow the pilot to perform precision tracking tasks, such as air-to-air gunnery and air-to-ground weapon delivery. The technique assesses the...

... axis stability and control of the aircraft. Data outputs include real time tracking data and pilot qualitative assessment. This paper presents a brief history and **technical** description of the technique and data requirements. Several applications where the HQDT methods were used to develop and evaluate systems are discussed. Finally, conclusions concerning ...

9/3,K/7 (Item 1 from file: 35)
DIALOG(R)File 35:Dissertation Abs Online

01408710 ORDER NO: AADAA-I9511624
THE AIRCRAFT ROTATION PROBLEM (MAINTENANCE ROUTING)
Author: ZHU, ZHONGXI
Degree: PH.D.
Year: 1994
Corporate Source/Institution: GEORGIA INSTITUTE OF TECHNOLOGY (0078)
Source: VOLUME 55/12-B OF DISSERTATION ABSTRACTS INTERNATIONAL.
PAGE 5549. 93 PAGES

...is to model and solve the aircraft rotation problem, which determines the routes of flights flown by the aircraft of a commercial

airline. Given a **flight** schedule, the airline first determines which fleet (type of aircraft) is assigned to each **flight** . This is the fleet assignment problem. Given the solution to a fleet assignment problem, the airline next determines the routes flown by each aircraft of...

...determining a good rotation. First, a good rotation must be profitable. Second, a good rotation must allow each aircraft to regularly undergo different types of **maintenance** checks. This routing process is a critical part of the entire planning process for airlines.

In this thesis, we define, model, and solve the aircraft rotation problem. Specifically, we contribute in the following ways. We first represent the flights assigned to a given **fleet** as a time-line network. We then model the aircraft rotation problem as a constrained Euler tour problem based on the time-line network. We...

...the same airplane rather than having to change airplanes at the stopover point. We also require the routing to satisfy the airline's operational and **maintenance** requirements. The operational requirement asks a unique route for each **fleet** , and the **maintenance** requirement asks the route to allow the aircraft to be maintained regularly. This is the **maintenance** routing.

We study the complexity of the aircraft rotation problem. We develop solution methodologies including an assignment based Lagrangian relaxation method, a combinatorial branch and bound algorithm, and a swapper heuristic. Unlike the common practice of fixing the connections during the day and only using overnight connections as options for 1maintenance routing, our approaches use all connections as options in **maintenance** routing. Our approaches also handle different types of **maintenance** requirements.

We implement our approaches to solve real-world rotation problems for a major airline. The Lagrangian relaxation method and the branch and bound algorithm...
...better the special structures of the aircraft rotation problem. Both the Lagrangian relaxation method and the branch and bound algorithm had difficulties with incorporating tight **maintenance** constraints. The swapper heuristic as a local search mechanism always found a fairly good local optimal solution. Depending upon the user's need, it can easily be configured to optimize the total through value, a **maintenance** criterion, or the combination of these two.

9/3,K/8 (Item 1 from file: 99)

1994675 H.W. WILSON RECORD NUMBER: BAST95056216
Advances in aerospace lubricant and wear metal analysis
Saba, Costandy S; Centers, Phillip W
Lubrication Engineering v. 51 (Sept. 1995) p. 777-83
DOCUMENT TYPE: Feature Article ISSN: 0024-7154

ABSTRACT: Wear metal **analysis** continues to play an effective diagnostic role for **condition** monitoring of gas turbine engines. Since the early 1960s the United States' military services have been using spectrometric oil **analysis** program (SOAP) to monitor the **condition** of aircraft engines. The SOAP has proven to be effective in increasing reliability, **fleet** readiness and avoiding losses of lives and machinery. Even though historical data have demonstrated the success of the SOAP in terms of

detecting imminent engine **failure** verified by **maintenance** personnel, the SOAP is not a stand-alone technique and is limited in its detection of large metallic wear debris. In response, improved laboratory, portable...

...development as well as the direction of future developmental activities in oil analysis due to technological opportunities, advances in engine development and changes in military **mission** are reviewed and discussed. Reprinted by permission of the publisher.

9/3,K/9 (Item 1 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database
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0009576320 IP ACCESSION NO: 200807-71-0903789; 200807-61-1004299; 20080869865; A08-99-0973913
Method and system for aircraft weapon station testing

Monk, R Winston; Van Cleve, David P

, USA
PUBLISHER URL:
http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&u=/netahtml/PTO/search-adv.htm&r=1&p=1&f=G&l=50&d=PTXT&S1=5614896.PN.&OS=pn/5614896&RS=PN/5614896

DOCUMENT TYPE: Patent
RECORD TYPE: Abstract
LANGUAGE: English
FILE SEGMENT: Metadex; Mechanical & Transportation Engineering Abstracts; ANTE: Abstracts in New Technologies and Engineering; Aerospace & High Technology

ABSTRACT:
A weapon station **testing** system for **testing** the **mission readiness** of an **aircraft** (10) having a **plurality** of weapon stations including a first weapon station (12a) and a second weapon station (12b) comprises a common electronics module (14) and a plurality of interchangeable **mechanical** fixtures (16a, 16b). A first interchangeable fixture (16a) is operative for interconnecting the common electronics module (14) with the first weapon station (12a). A second...

9/3,K/10 (Item 2 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database
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0009456859 IP ACCESSION NO: 200806-10-792286; A08-99-768225
SH-60 helicopter integrated diagnostic system (HIDS) program experience and results of seeded fault testing.

Hess, Andrew J; Hardman, Bill
Naval Air Warfare Center, Propulsion and Power Dept., Patuxent River, MD USA

STAR, v 37, 16 Aug. 1999
PUBLICATION DATE: 1999

PUBLISHER: NASA, Suite 1M32, Washington, DC, 20546-0001
COUNTRY OF PUBLICATION: USA
PUBLISHER URL: http://www.nasa.gov
PUBLISHER EMAIL: public-inquiries@hq.nasa.gov

DOCUMENT TYPE: Journal Article (Abstract Only)
RECORD TYPE: Abstract
LANGUAGE: English
ISSN: 1548-8837
REPORT NO: 19990053518
FILE SEGMENT: Mechanical & Transportation Engineering Abstracts; Aerospace & High Technology

ABSTRACT:
The evolution of automated diagnostic systems for helicopter **mechanical** systems has been aided by a Navy program of systematic testing of drive train components having known anomalies (seeded faults) while simultaneously executing a suite of diagnostic techniques to identify and classify the **mechanical** anomalies. This program, called the Helicopter Integrated Diagnostic System (HIDS) has been carried out using an iron bird test stand (SH-60) at NAWC - Trenton, and SH-60B/F **flight** vehicles at NAWC - Patuxent River. The SH-60 HIDS program has been the Navy's cornerstone effort to develop, demonstrate, and justify integrated **mechanical** diagnostic system capabilities for its helicopter fleets. The objectives of the program were to: 1. Acquire raw data for multiple cases of 'good' and seeded fault **mechanical** components on a fully instrumented drive train to support the evaluation of diagnostic algorithms and fault isolation matrices. Data is being acquired from 32 vibration...

...while a continuous usage monitoring system records parametric steady state data from the power plant and airframe. 2. Analyze vibration and other diagnostic indicators to **evaluate** sensitivity and performance of all **available** diagnostic methods when **analyzing** well-documented parts. **Evaluate** relative effectiveness of these various diagnostic methods, indicators, and their associated algorithms to identify and optimize sensor location combinations. 3. Demonstrate the ability to integrate...

...Integrate and evaluate comprehensive engine monitoring, gearbox and drivetrain vibration diagnostics, advanced oil debris monitoring, inflight rotor track and balance, parts life usage tracking, automated **flight** regime recognition, power assurance checks and trending, and automated **maintenance** forecasting in a well coordinated on-board and ground-based system. 5. Provide an extensive library of high quality vibration data on baseline and seeded...

...made available to anyone wanting to prove their diagnostic techniques or develop new capability. 6. Provide a 'showcase', state-of-the-art, fully functional Integrated **Mechanical** Diagnostic system to act as a catalyst demonstration which might lead to interest in a **fleet** wide production application. This paper will describe the overall program, the goals and objectives, the facilities used, the system evaluated, the accomplishments and the results...

...gearbo and powertrain 'seeded fault'testing will be presented. Lessons learned which can be applied to future Helicopter Usage Monitoring Systems (HUMS) and/or Integrated **Mechanical** Diagnostic (IMD) systems will also be

discussed.

9/3,K/11 (Item 3 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0009358773 IP ACCESSION NO: 2008007180; 200806-10-791358;
A08-99-767297
Effects of corrosion inhibiting lubricants on avionics reliability.

Abbott, W H
Battelle Columbus Labs., OH USA

STAR, v 37, 19 July 1999
PUBLICATION DATE: 1999

PUBLISHER: NASA, Suite 1M32, Washington, DC, 20546-0001
COUNTRY OF PUBLICATION: USA
PUBLISHER URL: http://www.nasa.gov
PUBLISHER EMAIL: public-inquiries@hq.nasa.gov

DOCUMENT TYPE: Journal Article (Abstract Only)
RECORD TYPE: Abstract
LANGUAGE: English
ISSN: 1548-8837
REPORT NO: 19990049260
FILE SEGMENT: Corrosion Abstracts; Mechanical & Transportation Engineering Abstracts; Aerospace & High Technology

ABSTRACT:
... The basis for the work was the premise that a significant number of typical No Defect (ND), Can Not Duplicate (CND), and Retest OK (RTOK) **maintenance** actions may be due to environmental corrosion of connector surfaces. This may include typical gold plated I/0 connectors as well as ground connections. The...

...that such materials can be routinely applied in the field with no identified or perceived risk to the aircraft systems or with any objections from **maintenance** personnel. Beyond this, the results from several years worth of **flight** tests have produced variable results/benefits among different LRUs as might be expected. However, on specific LRUs there have been significant reductions in ND and NR values as well as **Maintenance** Man Hours/ **Flight** Hour. Results comparing **maintenance** actions for aircraft with lubrication against comparable data for the entire **fleet** of aircraft within the same command have been favorable. While these results have been positive, there is one overriding conclusion which must be stressed. Lubricants for such applications cannot be selected in an arbitrary manner. Thorough qualification data must support these **decisions**. Such data do not appear to be **available** from historical qualification requirements.

9/3,K/12 (Item 4 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0009356712 IP ACCESSION NO: 200806-10-790594; A08-99-766533
F-16 loads/usage monitoring.

Spiekhout, D J
National Aerospace Lab., Structures and Materials Div., Amsterdam, Netherlands

STAR, v 37, 4 July 1999
PUBLICATION DATE: 1999

PUBLISHER: NASA, Suite 1M32, Washington, DC, 20546-0001
COUNTRY OF PUBLICATION: USA
PUBLISHER URL: http://www.nasa.gov
PUBLISHER EMAIL: public-inquiries@hq.nasa.gov

DOCUMENT TYPE: Journal Article (Abstract Only)
RECORD TYPE: Abstract
LANGUAGE: English
ISSN: 1548-8837
REPORT NO: 19990046360
FILE SEGMENT: Mechanical & Transportation Engineering Abstracts; Aerospace & High Technology

ABSTRACT:
Load monitoring of the F-16 **fleet** of the RNLAF has been carried out by NLR as a routine program since 1990. At that time the old system was replaced by an electronic device **capable** of **analysing** in **flight** the signal of a strain gage bridge. In later years, updates of the hardware have been implemented in order to record also some **flight** and engine parameters. Furthermore, collecting of administrative data has been integrated in the routine RNLAF **maintenance** debriefing procedures. In recent years development of a complete new load monitoring system took place. This system is fully integrated in the operational- and **maintenance** - procedures of the RNLAF. Main characteristics are an increase of the number of strain gage bridges to five and a **fleet** wide implementation. Besides **flight** parameters, engine and avionics parameters are being measured. Ground stations for data handling are located at the squadrons and at NLR. by using up to...

9/3,K/13 (Item 5 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0009290152 IP ACCESSION NO: 200805-10-773766; N08-99-752808
The application of time resolved dielectric instruments to air force ground fleet maintenance.

Thompson, Stephanie
Computational Systems, Inc., Knoxville, TN USA

STAR, v 36, 28 Sept. 1998
PUBLICATION DATE: 1998

PUBLISHER: NASA, Suite 1M32, Washington, DC, 20546-0001
COUNTRY OF PUBLICATION: USA
PUBLISHER URL: http://www.nasa.gov

PUBLISHER EMAIL: public-inquiries@hq.nasa.gov

DOCUMENT TYPE: Journal Article (Abstract Only)
RECORD TYPE: Abstract
LANGUAGE: English
ISSN: 1548-8837
FILE SEGMENT: Mechanical & Transportation Engineering Abstracts; Aerospace & High Technology
ABSTRACT:
... the Military Equipment Evaluation Program (MEEP) located at Eglin Air Force Base, FL, evaluated a time resolved dielectric instrument for use in air force ground **fleet maintenance** applications. They identified this instrument as a useful device for what they termed bumper testing intended to measure oil quality before changing oil rather than...

...and is in use at many US Air Force installations world wide. Typically an air base will have approximately 40 ground vehicles for every one **flight** vehicle. For example, Eglin has approximately 1200 ground vehicles supporting 30 fighting aircraft. The aircraft get oil analysis done very frequently. Until the time resolved dielectric instrument was made **available** , no oil **analysis** was performed on the ground **fleet** . This paper describes the application, use and results achieved by using a multifunctional oil analyzer in the **maintenance** shops to determine oil conditions before taking **maintenance** actions.

9/3,K/14 (Item 6 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0008993835 IP ACCESSION NO: 200804-10-366308; N08-99-354529
The vital link: the tanker's role in winning america's wars.

Cohen, Daniel M
Air Univ., Maxwell AFB, AL USA

STAR, v 39, 15 June 2001
PUBLICATION DATE: 2001

PUBLISHER: NASA, Suite 1M32, Washington, DC, 20546-0001
COUNTRY OF PUBLICATION: USA
PUBLISHER URL: http://www.nasa.gov
PUBLISHER EMAIL: public-inquiries@hq.nasa.gov

DOCUMENT TYPE: Journal Article (Abstract Only)
RECORD TYPE: Abstract
LANGUAGE: English
ISSN: 1548-8837
FILE SEGMENT: Mechanical & Transportation Engineering Abstracts; Aerospace & High Technology
ABSTRACT:
This paper focuses on the unique and vital capabilities of the US Air Force's KC-135 tanker **fleet** . Specifically, historic and current tanker usage, tanker operational employment, and the **capability** of today's tanker **fleet** are **analyzed** , with emphasis on force structure and force management. Given that the KC-135 is the USAF's primary air refueling asset and that no planned...

...force structure support future DOD and coalition operations? Since its inception in the mid-1950s, the KC-135 has undergone numerous configuration as well as **mission** changes. One constant throughout has been the reliance of the nation's airpower on this critical asset, whether It was sitting alert during the cold war, or providing **mission** essential fuel for F-117s en route to Baghdad during the Gulf War. The success of combat operations in Operation Allied Force was made possible...

...community than to any planned, deliberate inclusion of air refueling assets into the operations plan. In light of decreasing budgets, aging airframes, increased downtime for **maintenance** , and an explosion in the operations tempo, this paper proposes a four-pronged methodology addressing tanker vision, organization, training, and employment, as the correction needed...

9/3,K/15 (Item 7 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0008763148 IP ACCESSION NO: 200803-10-256950; N08-99-249007
The US navy's helicopter integrated diagnostics system (HIDS) program: power drive train crack detection diagnostics and prognostics, life usage monitoring, and damage tolerance; techniques, methodologies, and experiences.

Hess, Andrew; Hardman, William; Chin, Harrison; Gill, John
Naval Air Warfare Center, Aircraft Div., Patuxent River, MD USA

STAR, v 38, 5 May 2000
PUBLICATION DATE: 2000

PUBLISHER: NASA, Suite 1M32, Washington, DC, 20546-0001
COUNTRY OF PUBLICATION: USA
PUBLISHER URL: http://www.nasa.gov
PUBLISHER EMAIL: public-inquiries@hq.nasa.gov

DOCUMENT TYPE: Journal Article (Abstract Only)
RECORD TYPE: Abstract
LANGUAGE: English
ISSN: 1548-8837
FILE SEGMENT: Mechanical & Transportation Engineering Abstracts; Aerospace & High Technology

ABSTRACT:
The evolution of automated diagnostic systems for helicopter **mechanical** systems has been greatly advanced by the Navy, in a program of systematic testing of drive train components having known anomalies (seeded faults) while simultaneously executing a suite of diagnostic techniques to identify and classify the **mechanical** anomalies. This program, called the Helicopter Integrated Diagnostic System (HIDS) was carried out using both an iron bird test stand and SH-60B/F **flight** vehicles. The SH-60 HIDS program has been the Navy's cornerstone effort to develop, demonstrate, and justify integrated **mechanical** diagnostic system capabilities for its various helicopter fleets. The objectives of the original program were to: (1) Acquire raw data for multiple cases of 'good' and seeded fault

mechanical components on a fully instrumented drive train to support the evaluation of diagnostic algorithms and fault isolation matrices. Data is being acquired from 32 vibration...

...a continuous usage monitoring system records parametric steady state data from the power plant and air&ante. (2) Analyze vibration and other diagnostic indicators to **evaluate** sensitivity and performance of all **available** diagnostic methods when **analyzing** well-documented parts and their associated **failure** modes. Evaluate relative effectiveness of these various diagnostic methods, indicators, and their associated algorithms to identify and optimize sensor location combinations. (3) Demonstrate the ability to integrate and automate the data acquisition, diagnostic, fault evaluation and communication processes in a **flight** worthy system. (4) Integrate and evaluate comprehensive engine monitoring, gearbox and drive train vibration diagnostics, advanced oil debris monitoring, in- **flight** rotor track and balance, parts life usage tracking, automated **flight** regime recognition, power assurance checks and trending, and automated **maintenance** forecasting in a well-coordinated on-board and ground-based system. (5) Provide an extensive library of high quality vibration data on baseline and seeded...

...made available to anyone wanting to prove their diagnostic techniques or develop new capability. (6) Provide a 'showcase', state-of-the-art, fully functional Integrated **Mechanical** Diagnostic system to act as a catalyst demonstration which might lead to interest in a **fleet** wide production application. This paper will describe the HIDS program background, development, system capabilities, and accomplishments; but will also focus on the most recent demonstrated...
...component life usage monitoring philosophies and capabilities; and damage tolerance methodologies. Data and results from both the seeded fault 'iron bird'test cell rig and **flight** test aircraft will be presented. Experience, results, and lessons learned will be emphasized. HIDS initiated functions and capabilities being applied to the commercial off-the-shelf (COTS) SH-60 Integrated **Mechanical** Diagnostics System (IMDS) production program will be described. Conclusions and lessons learned that can be applied to future Helicopter Usage Monitoring Systems (HUMS) and/or Integrated **Mechanical** Diagnostic (IMD) systems will also be discussed.

9/3,K/16 (Item 8 from file: 23)

0008676657 IP ACCESSION NO: 200803-10-255632; N08-99-247689
Developing the crosswind takeoff and landing envelope for the F/A-18E/F 'Super Hornet'.

Desmond, Dave; Melton Iii, Henry; Tribino, Michael A
Boeing Co., Seattle, WA USA

STAR, v 38, 7 Apr. 2000
PUBLICATION DATE: 2000

PUBLISHER: NASA, Suite 1M32, Washington, DC, 20546-0001
COUNTRY OF PUBLICATION: USA
PUBLISHER URL: http://www.nasa.gov
PUBLISHER EMAIL: public-inquiries@hq.nasa.gov

DOCUMENT TYPE: Journal Article (Abstract Only)
RECORD TYPE: Abstract
LANGUAGE: English
ISSN: 1548-8837
FILE SEGMENT: Mechanical & Transportation Engineering Abstracts; Aerospace & High Technology
ABSTRACT:
... the Engineering, Manufacturing and Development (EMD) program. A maximum crosswind takeoff and landing capability, to 30 kt, was desired to allow maximum flexibility for the **fleet** users for both symmetric and asymmetric store loadings. One of the many **technical** challenges of this **flight** test program included the development of a landing technique which would be recommended for the **fleet** pilots. This technique had to provide satisfactory approach handling qualities with acceptable pilot workload. Additionally, once on-deck, the landing loads a(touchdown and the...

...Rogers Dry Lakebed, Edwards AFB, CA in the spring of 1998. Testing was scheduled at this facility because of the high natural winds and the **availability** of several lakebed runways, which would allow the **test** to be completed safely and efficiently. Due to the excellent aircraft flying qualities, performance, and favorable wind conditions, 38 demonstration crosswind takeoff and landings were...

9/3,K/17 (Item 9 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0008615666 IP ACCESSION NO: 200802-71-165864; 200802-60-165792; 2008157371; A08-99-161840
Fault recording and reporting method

Sudolsky, Michael D

, USA
PUBLISHER URL:
http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&u=/netahtml/PTO/search-adv.htm&r=1&p=1&f=G&l=50&d=PTXT&S1=6115656.PN.&OS=pn/6115656&RS=PN/6115656

DOCUMENT TYPE: Patent
RECORD TYPE: Abstract
LANGUAGE: English
FILE SEGMENT: Metadex; Mechanical & Transportation Engineering Abstracts; ANTE: Abstracts in New Technologies and Engineering; Aerospace & High Technology

ABSTRACT:
A method for recording and reporting fault information pertaining to various components of an **aircraft** . The method involves recording a diverse **plurality** of information output from various line replaceable units (LRU's) and other components of the aircraft during takeoff, **flight** and landing through the use of a bulk storage device, such as an optical quick access recorder (OQAR), on an electronic medium. The electronic medium is then removed from the aircraft after landing and read by an appropriate apparatus. From this information a service technician is **able**

to **determine** whether or not a fault indication recorded during **flight** is in fact a legitimate fault requiring the affected LRU to be removed from the aircraft for further diagnostic testing. The method significantly reduces the...

...LRU data of lesser importance is eliminated from consideration before more important information. The preferred methods minimize on aircraft data interpretation rendering unnecessary on-board **maintenance** processors and technicians for LRU troubleshooting.

9/3,K/18 (Item 10 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0008118348 IP ACCESSION NO: 200705-20-111358; A06-99-042530
Airport, Airspace, and Nas System Capacity Studies

Bradley, Anthony; Holladay, Robert; Vanderveer, John
FAA

, Sept. 1998
PUBLICATION DATE: 1998

PUBLISHER: Society of Automotive Engineers, 400 Commonwealth Dr., Warrendale, PA, 15096
COUNTRY OF PUBLICATION: USA
PUBLISHER URL: DRL: http://www.sae.org/servlets/productDetail?PROD TYP=PAPER&PROD CD=985553 http://www.sae.org

DOCUMENT TYPE: Conference Paper
RECORD TYPE: Abstract
LANGUAGE: English
REPORT NO: SAE Document 985553
FILE SEGMENT: Mechanical & Transportation Engineering Abstracts; Aerospace & High Technology
ABSTRACT:
... air, we must make certain we have the capacity to handle increased traffic on the ground.' - Jane Garvey, FAA Administrator (4/20/98) The FAA **Technical** Center (Aviation System Analysis and Modeling Branch, ACT-520) has been responsive to the FAA Airport Capacity Program customers for the past 22 years, developing, testing, and applying airfield and airspace simulation models. More than 90 capacity studies have been completed with ACT-520 personnel contributing their **technical** expertise to the Airport Design Teams. The teams are comprised of FAA personnel, airport operators, air carriers, other airport users and aviation industry representatives at ...

...or a less detailed tactical initiative. Recently, National Airspace System (NAS) modeling personnel joined the group providing system modeling expertise in the NAS Architecture and **Flight** 2000 programs. An arsenal of analysis tools and computer simulation programs has been developed and tested to accomplish each task. The group has experience using...

...perform simulations of improvements in the categories of airfield, facilities and equipment, ATC operational, and airport policy improvements. The delay effects of aircraft demand (schedules), **fleet** mix, runway

configurations, weather, aircraft separation standards, etc., were measured in the studies. Future studies will require new model development particularly in the arena of...

...part participation in this enterprise has generated an understanding of the interrelationships of various airport and airline systems. Our seven senior analysts and eight junior **analysts** combined with their professional expertise are **ready** to address the FAA Administrator's concerns about capacity

9/3,K/19 (Item 11 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0005731838 IP ACCESSION NO: 2001-11-010576; A00-11508
Managing corrosion in the aging fleet - A new approach to corrosion maintenance

Peeler, Deborah; Kinzie, Richard
USAF, Research Lab., Wright-Patterson AFB, OH [Peeler]
PUBLICATION DATE: 1999

PUBLISHER: Atlantic City Airport: FAA William J. Hughes Technical Center

CONFERENCE:
Joint FAA/DoD/NASA Conference on Aging Aircraft, 3rd, Albuquerque, NM, Proceedings, UNITED STATES, 20-23 Sept. 1999

DOCUMENT TYPE: Conference Paper
RECORD TYPE: Abstract
LANGUAGE: English
NUMBERS: A00-11501 01-01
FILE SEGMENT: Mechanical & Transportation Engineering Abstracts; Aerospace & High Technology
ABSTRACT:
... Advisory Board (1997) and the Air Force Corrosion Program Office (1990, 1997) document the complexity and magnitude of the impact of corrosion on the aging **fleet** . These studies highlight corrosion as a major driver on the **maintenance** costs and readiness shortfalls of each of the services as well as those of commercial aircraft. Significant manpower is required to inspect for, find and fix corrosion damage. Corrosion **maintenance** is time consuming as well as costly, leading to a considerable lengthening of the time to service an aircraft in PDM, and a concomitant decrease in aircraft availability to support Air Force **Mission** Requirements. This paper discusses recent incidences of structurally significant corrosion damage, and the **technical** challenges that need to be met if corrosion is to be economically and safely managed. Among those challenges are the development of new corrosion prevention technologies, the **ability** to accurately **assess** actual corrosion damage and its effect on structural integrity, the development of alternative abatement corrosion repair technologies, and the development of a comprehensive model to...

9/3,K/20 (Item 12 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0005596698 IP ACCESSION NO: A98-43071
Airport, airspace, and NAS system capacity studies

Schwartz, Albert; Holladay, Robert; Vanderveer, John; Bradley, Anthony
FAA, William J. Hughes Technical Center, Atlantic City, NJ [Schwartz
PUBLICATION DATE: 1998

CONFERENCE:
AIAA and SAE, 1998 World Aviation Conference, Anaheim, CA, UNITED STATES, 28-30 Sept. 1998

DOCUMENT TYPE: Conference
RECORD TYPE: Abstract
LANGUAGE: ENGLISH
REPORT NO: AIAA Paper 98-5553; SAE Paper 985553
FILE SEGMENT: Aerospace & High Technology

ABSTRACT:
The FAA **Technical** Center (Aviation System Analysis and Modeling Branch, ACT-520) has been responsive to the FAA Airport Capacity Program customers for the past 22 years, developing, testing, and applying airfield and airspace simulation models. Recently, NAS modeling personnel joined the group providing system modeling expertise in the NAS Architecture and **Flight** 2000 programs. An arsenal of analysis tools and computer simulation programs has been developed and **tested** to accomplish each task. This modeling **capability** permitted the group to perform simulations of improvements in the categories of airfield, facilities and equipment, ATC operational, and airport policy improvements. The delay effects of aircraft demand (schedules), **fleet** mix, runway configurations, weather, aircraft separation standards, etc., were measured in the studies. Future studies will require new model development particularly in the arena of...

9/3,K/21 (Item 13 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0005566892 IP ACCESSION NO: 2001-11-013115; A98-35350
Naval experience using a Health and Usage Monitoring System

Esposito, Thom; Pettigrew, James L
U.S. Navy, Aircraft Div., Patuxent River, MD [Esposito]
PUBLICATION DATE: 1998

CONFERENCE:
AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, 34th, Cleveland, OH, UNITED STATES, 13-15 July 1998

DOCUMENT TYPE: Conference Paper
RECORD TYPE: Abstract
LANGUAGE: English
REPORT NO: AIAA Paper 98-3546
FILE SEGMENT: Mechanical & Transportation Engineering Abstracts; Aerospace & High Technology

ABSTRACT:

A major cost element in aircraft operation is propulsion system **maintenance** . The rapidly expanding fields of information systems, data handling and AI have been applied to provide the **maintenance** decision maker with the basis for maximizing the return in **mission** capability from allocation of limited resources. This paper describes successes from use of a Health and Usage Monitoring System installed on US Navy S-3 aircraft engines. The application of new technology data systems with AI on U.S. Navy S-3 **fleet** aircraft has produced positive benefits. The ground station software contains knowledge-engineered AI that changes the recorded data into diagnostic information about each engine's capability to perform the **missions** . Any PC can present this information in an easily understandable format that allows the **decision** maker to readily diagnose the **condition** of individual engines and rank them on their relative capability. The resulting data base can show the on- **condition** status of each engine as the basis for **decisions** that will direct the limited resources to the least capable engines. Timely repair increases operational reliability and lowers **maintenance** cost. (Author)

9/3,K/22 (Item 14 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0005443708 IP ACCESSION NO: N97-20368
The ASAC Air Carrier Investment Model (Second Generation) (Final Report)

WINGROVE, E A R L R, I I I; JOHNSON, JESSEP; SICKLES, ROBINC; GOOD, DAVIDH
Rice Univ., Houston, TX. [WINGROVE]
PUBLICATION DATE: 1997

CONFERENCE:
, UNITED STATES

DOCUMENT TYPE: Report
RECORD TYPE: Abstract
LANGUAGE: ENGLISH
REPORT NO: NASA-CR-201678; LMI-NS602T1; NAS 1.26:201678; NIPS-97-27711
NUMBERS: Contract: NAS2-14361; RTOP 538-08-11
FILE SEGMENT: Aerospace & High Technology

ABSTRACT:
... research areas that have the greatest potential for improving the operation of the air transportation system. To accomplish this, NASA is building an Aviation System **Analysis Capability** (ASAC). The ASAC differs from previous NASA modeling efforts in that the economic behavior of buyers and sellers in the air transportation and aviation industries is central to its conception. To link the economics of **flight** with the technology of **flight** , ASAC requires a parametrically based mode with extensions that link airline operations and investments in aircraft with aircraft characteristics. This model also must provide a mechanism for incorporating air **travel** demand and profitability factors into the airlines' investment **decisions** . Finally, the model must be flexible and **capable** of being incorporated into a wide- ranging suite of economic and **technical** models that are envisioned for ASAC. We describe a second-generation Air Carrier Investment Model that meets these requirements. The enhanced model incorporates econometric results...

...by U.S.-scheduled passenger air carriers. It uses detailed information about their fleets in 1995 to make predictions about future aircraft purchases. It enables **analysts** with the **ability** to project revenue passenger-miles flown, airline industry employment, airline operating profit margins, numbers and types of aircraft in the **fleet** , and changes in aircraft manufacturing employment under various user-defined scenarios. (Author)

9/3,K/23 (Item 15 from file: 23) Jeanty
DIALOG(R)File 23:CSA Technology Research Database

0005277137 IP ACCESSION NO: N97-28419
Executive Summary: Parts on Demand Project (CATT Phase 2) (Final Report, 30 Sep. 1995 - 31 Dec. 1996)

GATES, ROBERTK
Analytic Sciences Corp., Midwest City, OK.
PUBLICATION DATE: 1996

CONFERENCE:
, UNITED STATES

DOCUMENT TYPE: Report
RECORD TYPE: Abstract
LANGUAGE: ENGLISH
REPORT NO: AD-A328457; TASC-TR-07952-9-VOL-1; NIPS-97-48820
FILE SEGMENT: Aerospace & High Technology

ABSTRACT:
... assesses threats to the nation's security and moves rapidly to develop appropriate counter-measures. In addition to modem battlefield hazards, the logistics of maintaining **mission readiness** presents many challenges. The GAO has recently **analyzed** some of the issues the joint services are facing as the plans for sustaining aircraft operations through the next century are being formulated. The GAO has profiled DoD challenges in: maintaining an aging aircraft **fleet** , reducing response time and cost of providing the spare parts, implementing commercial inventory management practices, reinventing buying and contracting practices, locating the original manufacturing source...

...components, monitoring available capacity of alternate sources at the firm or plant level, achieving more efficient interaction with the industrial base, digitizing massive amounts of **technical** data, grouping parts in logical families, reducing the large percentage of no-bids for small lot sizes, coping with diminishing manufacturing sources and material shortages...

...Program into the National Reinvention Laboratory program in 1995. The CATT program is focused in analyzing alternative business models for government supply operations to ensure **mission** readiness. Through a series of-controlled interventions, the CATT program focuses resources on specific problems and analyzes the effectiveness of a proposed alternative business model...

9/3,K/24 (Item 16 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0005146835 IP ACCESSION NO: A96-34565
HUMS for light helicopters in rescue and EMS operations

O'Farrell, James; Moe, Patrick
Swiss Air Ambulance - Rega, Zurich, Switzerland [O'Farrell]

PAGES: 98-106
PUBLICATION DATE: 1996

PUBLISHER: Alexandria, VA: American Helicopter Society

CONFERENCE:
AHS, Annual Forum, 52nd, Washington, DC, UNITED STATES, 4-6 June 1996

DOCUMENT TYPE: Conference Paper
RECORD TYPE: Abstract
LANGUAGE: ENGLISH
FILE SEGMENT: Aerospace & High Technology

ABSTRACT:
... day, 7 days-a-week helicopter rescue and air ambulance service using 15 Agusta 109k2 helicopters. Rega's primary goals are 100 percent accident-free **mission** completion, a high state of readiness, **mission** availability, and minimum consumption of aircraft life limited parts. To accomplish this goal, Rega is equipping the **fleet** with HUMS, which is expected to streamline the **maintenance** process and lead to achieving these goals. The HUMS is composed of two parts, an On Board System which records data from each **flight** , and a Ground Based System which stores the recorded data in a relational database. The data can then be used for reports, tracking of life limited parts, **determination** of the **condition** of a particular component or aircraft, and communications with the manufacturer on courses of action when the airworthiness of a part is questionable. This paper also discusses some aspects of **flight** testing of a new HUMS. (Author)

9/3,K/25 (Item 17 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0005038012 IP ACCESSION NO: N95-32758
Report to Congressional Committees. B-1B bomber: Evaluation of Air Force report on B-1B operational readiness assessment

General Accounting Office, Washington, DC. National Security and International Affairs Div.
PUBLICATION DATE: 1995

CONFERENCE:
, UNITED STATES

DOCUMENT TYPE: Report
RECORD TYPE: Abstract

LANGUAGE: ENGLISH
REPORT NO: GAO/NSIAD-95-151; B-261347
FILE SEGMENT: Aerospace & High Technology

ABSTRACT:
The Air Force was required to **test** the operational **readiness** rate of one B-1B bomber wing if the wing was provided the planned complement of spare parts, **maintenance** equipment and manpower, and logistics support equipment. The **tests** -- referred to as the B-1B Operational **Readiness Assessment** (ORA) -- were conducted from 1 June 1994 through 30 November 1994. The ORA test plan was complete and comprehensive. Further, the ORA was conducted in...

...test plan. The ORA demonstrated that, given a full complement of spare parts, equipment, and manpower, the Air Force could achieve and sustain a 75% **mission** capable rate for the B-1B. But, the ORA was not exclusively used to project the cost of sustaining the entire B-1B **fleet** at that rate. At the completion of the ORA, the **mission** capable rate for the B-1B **fleet** was about 65%. The Air Force believes that the completion of ongoing initiatives in progress and the continued funding for spare parts and repairs will increase the **fleet mission capable** rate to 72%. The Air Force **estimates** that for an additional $11.19 million for management actions and reliability and maintainability improvements, the B-1B **fl**eet has the potential to achieve and sustain a 75% **mission** capable rate by 2000. The GAO believes the $11.19 million estimate, which was based on various modeling techniques, is optimistic. Neither the GAO nor the Air Force can predict how successful the ongoing or planned initiatives will be. Therefore, the potential cost to achieve and sustain a 75% **mission** capable rate for the B-1B is still not known. (Derived from text)

9/3,K/26 (Item 18 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0004970662 IP ACCESSION NO: 2001-11-019973; A95-38180
Life management of aging Air Force aircraft - NDE perspective

Cordell, Tobey M
USAF, Wright Lab., Wright-Patterson AFB, OH [Cordell]

PAGES: 34-44
PUBLICATION DATE: 1995

PUBLISHER: Bellingham, WA: Society of Photo-Optical Instrumentation Engineers (SPIE Proceedings. Vol. 2455)

CONFERENCE:
Nondestructive evaluation of aging aircraft, airports, aerospace hardware, and materials; Proceedings of the Conference, Oakland, CA, UNITED STATES, 6-8 June 1995

DOCUMENT TYPE: Conference Paper
RECORD TYPE: Abstract
LANGUAGE: English
NUMBERS: A95-38176 10-38; A95-38176 10-38; SPIE-2455
FILE SEGMENT: Mechanical & Transportation Engineering Abstracts; Aerospace

& High Technology

ABSTRACT:
... the United States Air Force (USAF) to extend the operational life of its current aircraft. In the past, the USAF operator was able to replace **fleet** aircraft on a fairly regular basis. This process has been drastically altered by the significant reductions in the Defense Department budget as a result of the end of the Cold War. The requirement to extend the **fleet** 's operational life is placing greater importance on the ability to find, characterize, and ameliorate the deleterious effects of operation and **maintenance** . In addition, many aircraft are being asked to operate with changed **mission** requirements that were not envisioned when they were originally procured. The life management of the aging **fleet** is interwoven with the **ability** to utilize nondestructive **evaluation** (NDE) to identify and characterize changes in the materials and structures throughout their lifetime. (Author)

9/3,K/27 (Item 19 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0004940830 IP ACCESSION NO: 2001-11-020754; A95-45642
Data recorders crucial to state-of-the art crash probes

Phillips, Edward H
[Phillips]

Aviation Week & Space Technology (0005-2175), v 142, n 6, p 56, 57, 6 Feb. 1995
PUBLICATION DATE: 1995

PUBLISHER: McGraw Hill Publishing Co., McGraw-Hill Building, 1221 Avenue of the Americas, 3rd Floor, New York, NY, 10020
COUNTRY OF PUBLICATION: USA
PUBLISHER URL: http://www.AviationNow.com

CONFERENCE:
, UNITED STATES

DOCUMENT TYPE: Journal Article
RECORD TYPE: Abstract
LANGUAGE: ENGLISH
ISSN: 0005-2175
FILE SEGMENT: Mechanical & Transportation Engineering Abstracts; Aerospace & High Technology

ABSTRACT:
The advent of modern airline transports equipped with electronic **flight** and engine systems instrumentation, typically referred to as glass cockpits, has not diminished an investigator's **ability** to **determine** what caused an accident, but has significantly increased the challenge, since the position of needles and **mechanical** indicators associated with analog cockpits have often helped investigators determine the cockpit situation at impact. Therefore, accident investigators have been forced to increasingly rely on digital **flight** data recorders to help determine the cause of a crash. Lessons learned from **several** examples cited here of

recent 'glass cockpit' **aircraft** crash investigations are presented. (AIAA)

9/3,K/28 (Item 20 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database
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0004911866 IP ACCESSION NO: N96-14540
B-1B bomber: Evaluation of Air Force report on B-1B operational readiness assessment

General Accounting Office, Washington, DC. National Security and International Affairs Div.
PUBLICATION DATE: 1995

CONFERENCE:
, UNITED STATES

DOCUMENT TYPE: Report
RECORD TYPE: Abstract
LANGUAGE: ENGLISH
REPORT NO: AD-A297056; GAO/NSIAD-95-151; B-261347
FILE SEGMENT: Aerospace & High Technology

ABSTRACT:
The B-1B fleet has never achieved its objective of having a 75-percent **mission capable** rate. During the 2-year period preceding the **test** , the B- 1B **mission capable** rate averaged about 57 percent. According to the Air Force, a primary reason for the low **mission** capable rate was the level of funding provided to support the B-1B logistics support system. Concerned about the low **mission** capable rate, a history of B-1B problems, and the Air Force's plans to spend $2.4 billion modifying the B-1B to become a conventional bomber, the Congress directed the Air Force to conduct an ORA (Operational **Readiness Assessment**). The purpose of the ORA was to **determine** whether one B-1B wing was **capabl**e of achieving and maintaining its planned 75-percent operational readiness rate for a period of 6 months, if provided the full complement of spare parts, **maintenance** equipment and manpower, and logistic support equipment. (DTIC)

9/3,K/29 (Item 21 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database
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0004832095 IP ACCESSION NO: N94-37352
Planning German Army helicopter maintenance and mission assignment (M.S. Thesis)

SGASLIK, ACHIM
Naval Postgraduate School, Monterey, CA.
PUBLICATION DATE: 1994

CONFERENCE:
, UNITED STATES

RECORD TYPE: Abstract

LANGUAGE: ENGLISH
REPORT NO: AD-A280483
FILE SEGMENT: Aerospace & High Technology

ABSTRACT:
German Army light helicopter transportation regimens operate 45 Bell UH-1D helicopters to support demanding **missions** throughout Europe. **Maintenance** period scheduling, major exercise and regular **mission** assignment **decisions** directly influence the **readiness** of the helicopter **fleet** . Currently, all planning is done manually, which is unstructured and time consuming. This thesis describes a decision support system designed to assist with **maintenance** planning and **mission** assignment. The yearly **maintenance** and event scheduling problem and the short term **mission** assignment tasks are formulated and solved as elastic mixed integer linear programs. Resulting yearly schedules and short term sortie plans are both generated in a...

9/3,K/30 (Item 22 from file: 23) Jeanty
DIALOG(R)File 23:CSA Technology Research Database

0004821162 IP ACCESSION NO: N95-23400
Integrating O/S models during conceptual design, part 3 (Annual Report, 1 Jul. - 31 Dec. 1994)

EBELING, CHARLESE
Dayton Univ., OH. Dept. of Engineering Management and Systems.
PUBLICATION DATE: 1994

CONFERENCE:
, UNITED STATES

DOCUMENT TYPE: Report
RECORD TYPE: Abstract
LANGUAGE: ENGLISH
REPORT NO: NASA-CR-197905; NAS 1.26:197905
NUMBERS: Contract: NAG1-1327
FILE SEGMENT: Aerospace & High Technology

ABSTRACT:
Space vehicles, such as the Space Shuttle, require intensive ground support prior to, during, and after each **mission** . **Maintenance** is a significant part of that ground support. All space vehicles require scheduled **maintenance** to ensure operability and performance. In addition, components of any vehicle are not one-hundred percent reliable so they exhibit random failures. Once detected, a **failure** initiates unscheduled **maintenance** on the vehicle. **Maintenance** decreases the number of **missions** which can be completed by keeping vehicles out of service so that the time between the completion of one **mission** and the start of the next is increased. **Maintenance** also requires resources such as people, facilities, tooling, and spare parts. **Assessing** the **mission capability** and resource requirements of any new space vehicle, in addition to performance specification, is necessary to predict the life cycle cost and success of the vehicle. **Maintenance** and logistics support has been modeled by computer simulation to **estimate mission capability** and resource requirements for **eva**luation of proposed space vehicles. The

simulation was written with Simulation Language for Alternative Modeling II (SLAM II) for execution on a personal computer. For either one or a **fleet** of space vehicles, the model simulates the preflight **maintenance** checks, the **mission** and return to earth, and the post **flight** **maintenance** in preparation to be sent back into space. THe model enables prediction of the number of **missions** possible and vehicle turn-time (the time between completion of one **mission** and the start of the next) given estimated values for component reliability and maintainability. The model also facilitates study of the manpower and vehicle requirements for the proposed vehicle to meet its desired **mission** rate. This is the 3rd part of a 3 part **technical** report. (Author)

9/3,K/31 (Item 23 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0004819816 IP ACCESSION NO: 2001-13-000640
In Situ Bondline Strength Verification by Load Test

Goldstone, B A; Payne, F M
United Technologies
PUBLICATION DATE: 1994

CONFERENCE:
Society for the Advancement of Material and Process Engineering (USA), pp. 1215-1223, 1994

DOCUMENT TYPE: Conference Paper
RECORD TYPE: Abstract
LANGUAGE: English
FILE SEGMENT: Mechanical & Transportation Engineering Abstracts

ABSTRACT:
This paper describes the **technical** development of an inspection and load **test** method that would have the **capability** to verify a minimum acceptable bondline in **fleet** hardware. As part of this development, finite element analysis methods were used to determine bondline stresses and deflections for rocket motor operating loads. Motor-like fracture mechanics specimens were fabricated and tested to provide in situ data for bondline strength and critical stress intensity factors. Analytical simulation of the **flight** hardware and the fracture mechanics test specimen provided a one-on-one correlation of the measured and **predicted** bondline **capability** . The results of the first bondline inspection and load test on a **flight** motor provided an excellent correlation between measured and analytical results. This verification of the analytical techniques provided the confidence to proceed with the proposed bondline...

9/3,K/32 (Item 24 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0004264079 IP ACCESSION NO: A92-14422
V-22 pilot-in-the-loop aeroelastic stability analysis

PARHAM, T O M, J R; POPELKA, DAVID; MILLER, DAVIDG; FROEBEL, ARNOLDT

Bell Helicopter Textron, Inc., Fort Worth, TX [PARHAM]

PAGES: 1307-1319
PUBLICATION DATE: 1991

PUBLISHER: Alexandria, VA, American Helicopter Society

CONFERENCE:
AHS, Annual Forum, 47th, Phoenix, AZ, UNITED STATES, 6-8 May 1991

DOCUMENT TYPE: Conference Paper
RECORD TYPE: Abstract
LANGUAGE: ENGLISH
NUMBERS: A92-14326 03-01
FILE SEGMENT: Aerospace & High Technology

ABSTRACT:
Aeroelastic stability analyses have been correlated with pilot-in-the-loop stability data from the V-22 **flight** test program. In this paper, the analysis methodologies used to evaluate the aeroservoelastic stability characteristics of the Osprey are discussed, including the development of math models of pilot and control stick feedback characteristics and pertinent interactional aerodynamic effects. The pilot-in-the-loop stability analysis is refined using data from **mechanical** shake tests of the pilot and control stick, as well as data from inflight aeroelastic shake tests. No aeroelastic instabilities for the V-22 basic **aircraft** have been encountered or projected. However, **several** pilot-in-the-loop aeroelastic coupling mechanisms have been encountered during V-22 experimental **flight tests** . These are used to **evaluate** the **predictive capability** of three aeroservoelastic computer codes. The agreement of **analysis** with actual aircraft behavior enables definition of **flight** control system aeroelastic filters to be made with a high degree of confidence. (Author)

9/3,K/33 (Item 25 from file: 23)

0003718173 IP ACCESSION NO: N90-24271
Application of neural networks to the F/A-18 engine condition monitoring system (M.S. Thesis)

GENGO, JOSEPHT
Naval Postgraduate School, Monterey, CA.
PUBLICATION DATE: 1989

CONFERENCE:
, UNITED STATES

RECORD TYPE: Abstract
LANGUAGE: ENGLISH
REPORT NO: AD-A219820
FILE SEGMENT: Aerospace & High Technology

ABSTRACT:
Neural networks were applied to the Engine Condition and Monitoring

System of the F/A-18 aircraft. Due to recent **fle**et experience with compressor blade failures in **flight** , neural networks were applied to three engine conditions, flameout due to compressor failures, normal operating conditions, and low oil pressure conditions. An attempt was made to predict compressor **failure** using the neural networks. A back propagation and back propagation/Kohonen network were successfully tested in recognizing the various conditions with data previously unseen by the networks. Both networks demonstrated promise in **predicting** failures although not enough data was **available** for conclusive results. (GRA)

9/3,K/34 (Item 26 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0003564783 IP ACCESSION NO: 2001-11-036151; A88-51965
The vehicle integrated supportability analysis (VISA) simulation model

SMITH, MARTINK; ROGLIN, ROBERTL
Lockheed Aeronautical Systems Co., Marietta, GA [SMITH]

PAGES: 7
PUBLICATION DATE: 1988

CONFERENCE:
AIAA, AHS, and ASEE, Aircraft Design, Systems and Operations Meeting, Atlanta, GA, UNITED STATES, 7-9 Sept. 1988

DOCUMENT TYPE: Conference Paper
RECORD TYPE: Abstract
LANGUAGE: ENGLISH; ENGLISH
REPORT NO: AIAA PAPER 88-4476
FILE SEGMENT: Mechanical & Transportation Engineering Abstracts; Aerospace & High Technology

ABSTRACT:
... impact of supportability on the effectiveness of military aircraft. It also describes VISA, a simulation model developed specifically for this purpose. VISA simulates 'on-equipment' **maintenance** activity for a **group** of **aircraft** (or any transportation system), and incorporates the effects of reliability, maintainability, sparing, support equipment, and **technical** personnel, to **determine** the operational **capability** of the aircraft in terms of **Mission** Capable Rate, Sortie Generation Rate, Fix Rate, and other metrics. The level of detail for input is highly variable, making the model suitable for studies...

9/3,K/35 (Item 27 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0003470185 IP ACCESSION NO: N89-22316
An improved automated selection system for Navy pilots (Interim Report)

GRIFFIN, R A Y
Naval Aerospace Medical Research Lab., Pensacola, FL.
PUBLICATION DATE: 1988

CONFERENCE:
, UNITED STATES

DOCUMENT TYPE: Report
RECORD TYPE: Abstract
LANGUAGE: ENGLISH
REPORT NO: AD-A203438; NAMRL-RIB-88-2
FILE SEGMENT: Aerospace & High Technology

ABSTRACT:
Since 1947, the Navy has relied on the Aviation Qualification **Test** (AQT) of general **a**bility and the **Flight** Aptitude Rating (FAR) -- a composite of **mechanical** comprehension, spatial aptitude, and biographical tests--to select naval aviators. While this selection system has served the Navy well, the **failure** rate of pilot selectees has remained consistently high (although certainly less than the attrition rate before using a selection test battery), averaging 20 to 25 percent over the last 20 years. Two projects at the Laboratory that have demonstrated the potential for the improved prediction of both undergraduate and **fleet** **flight** performance are a naval aviator selection program and a **fleet** performance prediction program. Results from these two computerized projects are particularly exciting because for the first time in 40 years we have demonstrated that cognitive and one-dimensional tracking tasks account for increased variance in predicting completion of primary **flight** training. That is, the tests predict those individuals who will pass or fail **flight** training, even after their initial selection using the present selection battery, the AQT/FAR. Alternately, using multidimensional tracking and multitask **tests**, we have demonstrated the **ability** to **predict** an individual's **flight** grade and the number of **flight** hours required to complete primary training. Finally, certain of the multitask tests even predict the air combat maneuvering performance of **fleet** pilots as they perform on instruments. (GRA)

9/3,K/36 (Item 28 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0003353156 IP ACCESSION NO: N88-14984
Turbine engine supportability study for Army Aviation Systems Command (AVSCOM)

Oak Ridge Gaseous Diffusion Plant, TN.
PUBLICATION DATE: 1987

CONFERENCE:
, San Diego, CA, UNITED STATES

DOCUMENT TYPE: Report
RECORD TYPE: Abstract
LANGUAGE: ENGLISH
REPORT NO: DE88-002339; K/DSRD-1
NUMBERS: Contract: DE-AC05-84OT-21400
FILE SEGMENT: Aerospace & High Technology

ABSTRACT:

This study attempts to **assess** the **ability** of the Army to support its gas turbine engine **fleet** which powers the US Army helicopter **fleet** . This task was composed of three elements: **assessing** the capabilities of commercial **available** sources, isolating the cost drivers, and investigating the entire spectrum of required support at all levels of **maintenance** . The study team was charged with making recommendations that would improve the effectiveness of logistic support while enhancing the **mission** readiness. The study centered on an intensive top-down examination of four options that exist within the worldwide gas turbine engine logistics arena. Those options...

9/3,K/37 (Item 29 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0003081511 IP ACCESSION NO: 2001-11-041977; A86-47419
Aircraft control surface failure detection and isolation using the OSGLR test [(orthogonal series generalized likelihood ratio)]

BONNICE, W F; MOTYKA, P; WAGNER, E; HALL, S R
Charles Stark Draper Laboratory, Inc., Cambridge, MA [BONNICE]

PAGES: 156-164
PUBLICATION DATE: 1986

PUBLISHER: New York, American Institute of Aeronautics and Astronautics

CONFERENCE:
Guidance, Navigation and Control Conference, Williamsburg, VA, Technical Papers, UNITED STATES, 18-20 Aug. 1986

DOCUMENT TYPE: Conference Paper
RECORD TYPE: Abstract
LANGUAGE: English
REPORT NO: AIAA PAPER 86-2028
NUMBERS: A86-47401 23-63; Contract: NAS1-17556; A86-47401 23-63
FILE SEGMENT: Mechanical & Transportation Engineering Abstracts; Aerospace & High Technology

ABSTRACT:
... of the algorithm to modeling errors is presented. The steady-state implementation of the algorithm based on a single linear model valid for a cruise **flight condition** is **tested** using a nonlinear aircraft simulation. A number of off- nominal no- **failure flight** conditions including maneuvers, nonzero flap deflections, different turbulence levels and steady winds were tested. Based on the no- **failure** decision functions produced by off-nominal **flight** conditions, the **failure** detection and isolation performance at the nominal **flight condition** was **determined** . The extension of the algorithm to a wider **flight** envelope by scheduling on dynamic pressure and flap deflection is examined. Based on this **testing** , the OSGLR algorithm should be **capable** of detecting control surface failures that would affect the safe operation of a commercial **aircraft** . Isolation may be difficult if there are **several** surfaces which produce similar effects on the **aircraft** . Extending the algorithm over the entire operating envelope of a commercial aircraft appears feasible. (Author)

9/3,K/38 (Item 30 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0003021836 IP ACCESSION NO: 2001-11-042307; A87-19213
Model for analysis of combat sustainability

COOK, T N
United Technologies Corp., Sikorsky Aircraft, Stratford, CT [COOK]

PAGES: 157-166
PUBLICATION DATE: 1986

PUBLISHER: Alexandria, VA, American Helicopter Society

CONFERENCE:
American Helicopter Society, Annual Forum, 42nd, Washington, DC,
Proceedings. Volume 1, UNITED STATES, 2-4 June 1986

DOCUMENT TYPE: Conference Paper
RECORD TYPE: Abstract
LANGUAGE: English
NUMBERS: A87-19201 06-01; A87-19201 06-01
FILE SEGMENT: Mechanical & Transportation Engineering Abstracts; Aerospace & High Technology
ABSTRACT:
... assess the survivability of helicopters operating against small-arms threats of varying intensity and to predict the effects of small-arms damage on aircraft combat **maintenance** and battle-damage repair. Sustainability factors generated by MACS are used by Sikorsky's CMS (Combat **Maintenance** Simulator) model to **evaluate** the **mission** **availability** and sortie-generation **capability** of a helicopter **fleet** operating in a particular threat scenario. (Author)

9/3,K/39 (Item 31 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0002753370 IP ACCESSION NO: N85-23790
Condition monitoring of helicopter gearboxes using automatic vibration analysis techniques

GADD, P; MITHCELL, P J
MOD Navy [GADD, MITHCELL]
PUBLICATION DATE: 1985

CONFERENCE:
AGARD Gears and Power Transmission Systems for Helicopters and Turboprops
10 p (SEE N85-23765 14-05), International Organization

DOCUMENT TYPE: Conference Paper
RECORD TYPE: Abstract
LANGUAGE: English
FILE SEGMENT: Aerospace & High Technology

ABSTRACT:
... enhanced signal averaging techniques were developed to give early warning of the onset of a variety of gearbox failures. Prototype analysis equipment was developed and **tested** which will permit the **condition** of components within helicopter dynamic systems (rotors, gearboxes, and powerplants) to be established. Arrangements for data collection in **flight** and during ground runs are described. The signal processing methods, including the automatic techniques for secondary analysis which enable defined features to be extracted from...

...extent to which damage or malfunction of various internal components can be discerned by the techniques employed. The question of application to the widely dispersed **fleet** of naval aircraft is considered, and the prospects for achieving full on- **condition** **maintenance** of in-service gearboxes is **assessed** .

9/3,K/40 (Item 32 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0002336972 IP ACCESSION NO: N83-18814
TOPEX satellite option study [Final Report]

PAGES: 69P
PUBLICATION DATE: 1982

CONFERENCE:
, United States

DOCUMENT TYPE: Report
RECORD TYPE: Abstract
LANGUAGE: English
REPORT NO: NASA-CR-169897; NAS 1.26:169897; TRW-40180-6001-UT-00;
Pagination 69P
NUMBERS: Contract: JPL-956199
FILE SEGMENT: Aerospace & High Technology

ABSTRACT:
The basic design of the **fleet** satellite communication spacecraft (FLTSATCOM) can easily accommodate any of the three payload options for the ocean dynamic topography experiment (TOPEX). The principal **mission** requirements as well as the payload accommodations and communications systems needed for launching this payload are reviewed. The existing FLTSATCOM satellite design is identified and the approaches for the proposed propulsion system are described in addition to subsystems for **mechanical** ; power; attitude and velocity control; and telemetry, tracking and control are described. The compatability of FLTSATCOM with the launch vehicle is examined and its capabilities vs TOPEX requirements are summarized. Undetermined changes needed to meet data storage, thermal control, and area to mass ratio requirements are discussed. Cost **estimates** are included for budgetary and planning purposes. The **availability** of the described design is **assessed** based on the continuing production of FLTSATCOM spacecraft during the schedule span planned for TOPEX.

9/3,K/41 (Item 33 from file: 23)

DIALOG(R)File 23:CSA Technology Research Database

0001781571 IP ACCESSION NO: 200212-13-005516; A79-26667
Space Shuttle Solid Rocket Booster decelerator subsystem - Air drop test vehicle/B-52 design

RUNKLE, R E; DROBNIK, R F
NASA, Marshall Space Flight Center, Huntsville, Ala. [RUNKLE]

PAGES: 313-319
PUBLICATION DATE: 1979

PUBLISHER: New York, American Institute of Aeronautics and Astronautics, Inc.

CONFERENCE:
Aerodynamic Decelerator and Balloon Technology Conference, 6th, Houston, Tex., Technical Papers, United States, 5-7 Mar. 1979

DOCUMENT TYPE: Conference Paper
RECORD TYPE: Abstract
LANGUAGE: English
REPORT NO: AIAA 79-0466
NUMBERS: A79-26626 10-01; A79-26626 10-01
FILE SEGMENT: Mechanical & Transportation Engineering Abstracts; Aerospace & High Technology

ABSTRACT:
... System required the design of a large drop test vehicle that would meet all the stringent requirements placed on it by structural loads, safety considerations, **flight** recovery system interfaces, and sequence. The drop **test** vehicle had to have the **capability** to **test** the drogue and the three main parachutes both separately and in the total **flight** deployment sequence and still be low-cost to fit in a low-budget development program. The design to test large ribbon parachutes to loads of 300,000 pounds required the detailed investigation and integration of **several** parameters such as carrier **aircraft** **mechanical** interface, drop test vehicle ground transportability, impact point ground penetration, salvageability, drop test vehicle intelligence, **flight** design hardware interfaces, and packaging fidelity.

9/3,K/42 (Item 34 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0001695081 IP ACCESSION NO: A79-51448
Active/passive scanning (airborne multispectral laser scanners for agricultural and water resources applications)

WOODFILL, J R; THOMSON, F J
NASA, Johnson Space Center, Houston, Tex. [WOODFILL]

PAGES: 442-449
PUBLICATION DATE: 1979

PUBLISHER: McLean, Va., STS Press

CONFERENCE:
International Conference on Lasers, Orlando, Fla., United States, 11-15 Dec. 1978

DOCUMENT TYPE: Conference Paper
RECORD TYPE: Abstract
LANGUAGE: English
NUMBERS: Contract: NAS9-14594; A79-51401 23-36
FILE SEGMENT: Aerospace & High Technology
ABSTRACT:
The paper deals with the design, construction, and applications of an **active** /passive multispectral scanner combining lasers with conventional passive remote sensors. An application investigation was first undertaken to identify remote sensing applications where **active** /passive scanners (APS) would provide improvement over current means. Calibration techniques and instrument sensitivity are **evaluated** to provide **predictions** of the APS's **capability** to meet user needs. A preliminary instrument design was developed from the initial conceptual scheme. A design review settled the issues of worthwhile applications, calibration approach, hardware design, and laser complement. Next, a detailed **mechanical** design was drafted and construction of the APS commenced. The completed APS was tested and calibrated in the laboratory, then installed in a C-47 **aircraft** and ground tested. **Several** **flight** tests completed the test program.

9/3,K/43 (Item 35 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0001219873 IP ACCESSION NO: 200212-12-024340; A76-32149
Mechanical function and engine performance for the Army UH-1 H helicopter in the AIDAPS program (Automatic Inspection, Diagnostic and Prognostic Systems)

PLOG, L; GANN, D
U.S. Army, Aviation Systems Command, St. Louis, Mo. [PLOG, GANN]

PAGES: 303-309
PUBLICATION DATE: 1975

PUBLISHER: San Antonio, Tex., Southwest Research Institute

CONFERENCE:
Symposium on Nondestructive Evaluation, 10th, San Antonio, Tex., Proceedings., United States, 23-25 Apr. 1975

DOCUMENT TYPE: Conference Paper
RECORD TYPE: Abstract
LANGUAGE: English
NUMBERS: A76-32126 15-38; A76-32126 15-38
FILE SEGMENT: Mechanical & Transportation Engineering Abstracts; Aerospace & High Technology

ABSTRACT:
An automatic inspection, diagnostic, and prognostic system (AIDAPS) which

will automatically detect **mechanical** malfunctions and warn of impending failures is under development for the Army **fleet** of helicopters. The Phase I design and testing of AIDAPS systems for use with the UH-1H helicopter is discussed. The diagnostic parameters serving as...

...for the automatic evaluation of the major systems and subsystems are outlined. Two alternative systems are under consideration. Both incorporate identical data acquisition units and **flight** line data **analyzers** . One system includes a computer memory unit **capable** of real time inspection and diagnosis and inflight warning of systems failures; in the alternative system the computer memory unit is replaced by a digital...

9/3,K/44 (Item 36 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0000243206 IP ACCESSION NO: N03-17717
A Study of the Mechanical Properties of Modern Radial Aircraft Tires

Daugherty, Robert H
NASA, Langley Research Center, Hampton, VA [Daugherty]

DOCUMENT TYPE: Monograph
RECORD TYPE: Abstract
LANGUAGE: English
REPORT NO: NASA/TM-2003-212415; L-18286; NAS 1.15:212415
FILE SEGMENT: Aerospace & High Technology

ABSTRACT:
An experimental investigation was conducted at the NASA Langley Research Center to study the effects of various parameters on the **mechanical** properties of a number of modern radial aircraft tires such as would be found in the present commercial transport aircraft **fleet** . The range of tire sizes encompasses most of the tires that would be observed on both nose-and main-landing gear installations. Three radial tire...

...in inflation pressure within a rather large range of pressures designed to simulate 80 Fahrenheit degrees of temperature change from origin to destination for a **flight** . The radial aircraft tires were found to behave like most other tires in response to variations in vertical load and yaw angle. The side-force...

...of cornering efficiency, was found to increase with increases in yaw angle and decrease with increases in vertical load. A single model to provide a **predictive** **capability** for the side force coefficient, regardless of tire size, is presented. (Author)

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? show files;ds
File 264:DIALOG Defense Newsletters 1989-2008/Oct 31
         (c) 2008 Dialog
File 388:PEDS: Defense Program Summaries 1999/May
         (c) 2005 Forecast Intl/DMS
File 654:US PAT.FULL. 1976-2008/OCT 28
         (c) Format only 2008 Dialog
File 990:NewsRoom Current Jul 01-2008/Oct 30
         (c) 2008 Dialog
File 992:NewsRoom 2007
         (c) 2008 Dialog
File 994:NewsRoom 2005
         (c) 2008 Dialog

Set     Items   Description
S1          9   (FLEET)(2N)(AIRPLANE? OR AIRCRAFT? OR PLANES OR (AIR OR AE-
              RO)()(PLANES OR CRAFT OR SQUADRON))(S)(READINESS OR PREPAREDN-
              ESS OR AVAILABILITY OR CONDITION OR STATE OR STATES)(S)(MISSI-
              ON OR FLIGHT OR DESTINATION)(6N)(ASSIGN? OR REQUEST OR TASK OR
               REQUEST)(3S)(MAINTENANCE)(3S)(PROBABILITY OR RISK OR LIKELIH-
              OOD)(6N)(FAILURE OR ACCIDENT)
S2          9   RD  (unique items)
? t2/3,k/all

 2/3,K/1     (Item 1 from file: 264)
DIALOG(R)File 264:DIALOG Defense Newsletters
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00101536
 Deplorable Safety Record of Firefighting Aircraft Scored in Report
Air Safety Week
December 9, 2002 VOL: 16  ISSUE: 46  DOCUMENT TYPE: NEWSLETTER
PUBLISHER:  PHILLIPS BUSINESS INFORMATION
LANGUAGE: ENGLISH         WORD COUNT: 3736       RECORD TYPE: FULLTEXT

         (c) PHILLIPS PUBLISHING INTERNATIONAL All Rts. Reserv.

COMPANY NAMES (DIALOG GENERATED): Alaska Airlines ; Aviation Safety Program
; Boeing ; Conair Aviation Ltd ; Federal Aviation ; Helicopters Inc ; LLC ;
National Aeronautics and Space Administration ; NASA ; Petroleum ; Ultimate
; University of Southern California

TEXT:
...crashes during last summer's firefighting
season, which was one of the worst in drought-plagued recent years, placing
a
great demand on an aging  fleet  of  aircraft . Five aircrew members were
killed in
the three crashes. The two fixed-wing losses - a C-130 on June 17 and a
PB4Y-2
(a...

...firefighting fleet are instructive. Certainly the commercial airline
industry
has experienced problems of increasing demand necessitating high
utilization of
older aircraft and increasing pressures on  maintenance  and inspection for
```

assured airworthiness - all in the face of enormous pressure to reduce costs.

So, too, with the aerial firefighting fleet. More fires increased demand. The planes were flying antiques, and the service contracts contained outright disincentives for safety. In terms of unfilled safety officer positions and deferred **maintenance** , there are clearly evident parallels in the aerial firefighting fleet to the situation found at Alaska Airlines [ALK] preceding the Jan. 31, 2000, fatal crash of Flight 261. The National Transportation Safety Board holds its final hearing into that crash investigation this week, and the board is likely to cite **maintenance** shortcomings, pressures to minimize **maintenance** costs, unfilled safety billets, and a breakdown in Federal Aviation Administration (FAA) oversight - all of which were contributing factors to the crash.

Thus, while passenger and cargo operators are not flying into smoke-filled turbulence to douse raging forest fires, the **maintenance** and management shortcomings that likely will result in complete grounding of the aerial firefight fleet offer an instructive and poignant case study. Recall that Alaska Airlines faced grounding if it did not clean up its **maintenance** act (see ASW, June 12, 2000). The safety program breakdowns at Alaska Airlines triggered what FAA officials dubbed the National Program Review of the nation off last summer were the victims of almost criminal neglect.

The report charged that training, **maintenance** , and other safety deficiencies put firefighter aircrews at unnecessary risk, as evidenced by a deplorable safety record.

The two fatal crashes wiped out five percent of the 40- **aircraft fleet** of large fire retardant bombers. If that accident rate were applied to the commercial airline fleet, roughly 200 fatal air crashes would occur annually - a...

...that characterized the U.S. airline industry before the Sept. 11, 2001, terrorist attacks. The pervasive drought conditions over nearly 50 percent of the United **States** landmass, as of October 2002, has meant that fires in 2002 charred double the acreage than the 10-year annual average. Moreover, the policy of...fuel in the wing tanks.

With no engineering basis for determining their structural durability, the panel bluntly concluded, "All large air tankers are now at **risk** of catastrophic structural flight **failure** ."

That stark statement is just one of many hard-hitting statements in the panel's report. Below, we present a sampling of findings in the...But the

FAA is not doing that job, leaving the responsibility to
aircraft operators, who are encouraged by the Forest Service contracting
process
to minimize **maintenance** costs."[P. 30]

Mission muddle

"The variety of missions, philosophies and unclear standards ...
creates
a 'mission muddle' that compromises safety." [P. iv]
"The panel heard...rely on individual skills to
beat the odds of being involved in an accident ... They reported
experiencing
'silent intimidation,' being subtly expected to not report **maintenance** or
training violations." [P. 36]
"The oft-repeated acceptance by those in federal service and
industry
that firefighting 'is a risky business' is intolerable. Risks...
firefighting mission to a private firm operating
under a contract containing well-structured financial incentives to operate
with
significantly higher standards of safety and training.
Assign the aerial firefighting **mission** to another government
agency
altogether.
Reengineer and strengthen the structures of existing aircraft. To
ensure
safety, limit operations to tankers that have been inspected and...

...to convert and lease these airplanes, and
over a 20-year amortization period, the government might well find this
approach
very cost-effective.
During heavy **maintenance** checks, install cockpit voice, flight
data
and/or quick access recorders (CVR/FDR/QAR). Recalling the 1994 fatal crash
at
Pearblossom, Calif., where the right...Canadian operator Conair, the panel
learned that
the company had made significant improvements in its safety record by
establishing a safety department, revising inspection and **maintenance**
programs,
and introducing a comprehensive training regimen.
"Conair modeled its safety program after one initiated by Petroleum
Helicopters, Inc., which supports offshore oil-drilling operations...

2/3,K/2 (Item 1 from file: 388)
DIALOG(R)File 388:PEDS: Defense Program Summaries

09008070

Aerospace Flight Dynamics

Binder: PROGRAM ELEMENT DESCRIPTIVE SUMMARY - FY1999
Service: AIR FORCE

  Pub. Date: MAY 20, 1998
     Source: Forecast International/DMS
   Language: English
 Word Count: 5891
Pgm.Element: 0602201F

    Country: UNITED STATES
   Industry: AEROSPACE AND DEFENSE
Binder Code: PEDS1999

...pilot integration, vehicle subsystems, and air base
operability to reduce life cycle costs and improve the performance of
existing and future air vehicles, and the **maintenance** and
survivability of air bases. The payoffs from these technology
programs include: increased survivability, affordability,
reliability, maintainability, and supportability for air vehicles and
subsystems; improved...

...FYs 1999 and out, additional
emphasis has been placed on aerospace flight dynamics technologies
that can be applied to prolonging the life of our aging **aircraft**
fleet .

(U) B. Program Change Summary ($ in Thousands)
                    FY 1997 FY 1998 FY 1999 Total

(U) Previous President's Budget (FY 1998 PB)
                    62934   60509   65039...

...through
proven techniques that account for life, risk, repairs, and dynamic
loads.
- (U) Developed corrosion analysis metrics to assess
corrosion fatigue effects on inspection and **maintenance** intervals.
- (U) Developed crack growth analysis and preliminary
probabilistic risk assessment techniques which incorporate widespread
fatigue damage effects to better predict structural component service
life...proven techniques that account for life, risk,
repairs, and dynamic loads.
- (U) Develop life prediction analysis techniques to assess
corrosion fatigue effects on inspection and **maintenance** intervals.
- (U) Develop mature probabilistic risk assessment
techniques which incorporate widespread fatigue damage effects to
better predict structural component service life.
- (U) Further develop techniques...

...proven techniques that account for life, risk,
repairs, and
dynamic loads.
- (U) Validate analysis methodology and metrics to assess
corrosion fatigue effects on inspection and **maintenance** intervals and
restoral strength.
- (U) Evaluate probabilistic techniques to assess **risk** of
failure of structural component subject to widespread fatigue damage.
- (U) Validate repair design tool for bonded-composite
repairs of metallic structures, eliminating riveted/bolted metal
repair...off-board data.

- (U) Develop display format requirements for integrating in-flight mission planning and automated low-level flight.
- (U) Review operator mission requirements; assess **availability** /applicability of human-machine interface technologies.
- (U) Initiate development of vehicle- pilot/operator integration techniques as they relate to uninhabited combat vehicles.
- (U) $3261 Develop...

...U) Develop advanced pilot decision aids to improve tactical landing approaches and air-to-air situational awareness.
- (U) Continue review of operator mission requirements; evaluate **availabil**ity /applicability of human-machine interface technologies.
- (U) Develop pilot-operator integration technologies for **mission** re- planning **task** consent, and system status information.
- (U) $3598 Develop capabilities to evaluate ways to increase performance and survivability while decreasing cost and supportability requirements.
- (U) Perform...

2/3,K/3 (Item 1 from file: 654) Jeanty
DIALOG(R)File 654:US PAT.FULL.

0005180848 **IMAGE Available
Derwent Accession: 2003-466262
Method, system and computer program product for analyzing maintenance operations and assessing the readiness of repairable systems
Inventor: Scott Black, INV
Kirby Keller, INV
Assignee: The Boeing Company(02), Seattle, WA
Correspondence Address: ALSTON & BIRD LLP BANK OF AMERICA PLAZA, 101 SOUTH TRYON STREET, SUITE 4000, CHARLOTTE, NC, 28280-4000, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20030033178	A1	20030213	US 2001918945	20010731

Fulltext Word Count: 10973

Summary of the Invention:
...from among those that will be operational on the predetermined date of the mission without any consideration as to the relative status or degree of **readiness** of the aircraft. In determining the **availability** of the aircraft, a minimum equipment list is typically utilized to identify a number of subsystems that must be functioning in order for the aircraft...

...equipment identified by the minimum equipment list would be identified as a candidate for the mission without any indication as to the relative degree of **readiness** of the aircraft and its respective subsystems...

...aircraft that are operational and available on the predetermined date of the mission, but also to provide some indication as to the relative

degrees of **readiness** of the aircraft. As such, the mission commander could select those aircraft that have the greatest likelihood of successfully completing the mission without failure of one or more aircraft subsystems. To date, however, mission commanders are not provided with information relating to the relative degrees of **readiness** of the aircraft...

...0008] An automated method, system and computer program product for assessing the **readiness** of a plurality of repairable systems, such as a fleet of aircraft, are therefore provided. In addition to identifying the repairable systems that will be operational, the method, system and computer program product of this aspect of the present invention also determine the relative **state** of **readiness** of the plurality of repairable systems such that the repairable systems that are most likely to successfully complete the designated task can be selected. Additionally, an automated method of analyzing the **maintenance** operations performed upon a plurality of repairable systems, such as a fleet of aircraft, is provided. According to this aspect of the present invention, the relative **states** of **readiness** of the plurality of repairable systems are determined and **maintenance** resources are allocated based upon the respective measures of the relative **states** of **readiness** of the repairable systems. As such, **maintenance** operations scheduled for the aircraft that will have the greatest **state** of **readiness** upon completion of the **maintenance** operations can be prioritized...

...0009] According to one aspect of the present invention, an automated method, system and computer program product for assessing the **readiness** of a plurality of repairable systems are provided. According to this aspect, at least one system allocation request is received. The system allocation request typically includes a date and the number of systems to be allocated to the task. The relative **states** of **readiness** of the plurality of repairable systems are then automatically determined. In this regard, the relative **states** of **readiness** are determined by analyzing **maintenance** information associated with the repairable systems to determine the repairable systems that will be operational on the date of the requested system allocation. In addition, the relative **states** of **readiness** are determined by ascertaining respective measures of the relative **states** of **readiness** of the repairable systems that will be operational on the date of the requested system allocation based upon respective probabilities of failure of the repairable systems following completion of the **maintenance** operations. In this regard, a determination of the respective measures of the relative **states** of **readiness** of the repairable systems on the date of the requested system allocation may be based upon an intensity function appropriate for the type of process...

...0010] Based upon the relative **states** of **readiness** of the repairable systems, the systems that will be operational on the date of the requested system allocation will be identified. In addition, the respective measures of the relative **states** of **readiness** of the repairable systems identified to be operational on the day the requested system allocation will be provided. As such, in addition to merely identifying systems that will be operational on the date of the requested system allocation, the systems having the greatest **state** of **readiness** on the date of the requested system allocation can be identified. As such, the systems that are most capable of successfully completing the

task can...

...According to this aspect of the present invention, a modification of the system allocation request may also be proposed in order to increase the relative **states** of **readiness** of the systems identified to be operational on the date of the modified system allocation request in comparison to the relative **states** of **readiness** of the systems identified to be operational on the date of the original system allocation request...

...0011] According to one advantageous embodiment, an automated method, system and computer program product are provided for assessing the **readiness** of a **fleet** of **aircraft** , each of which is comprised of a plurality of repairable subsystems. According to this embodiment, at least one **mission request** is received that includes a date and a number of aircraft. Relative **states** of **readiness** of a plurality of aircraft are then determined by automatically analyzing **maintenance** information associated with the plurality of aircraft. Aircraft that will be operational on the date of the requested mission are then identified and respective measures of the relative **states** of **readiness** of these aircraft are then provided. In this regard, the aircraft that have the greatest likelihood of completing the requested mission may be identified and modifications of the **mission request** may be proposed in order to increase the relative **states** of **readiness** of the aircraft operational on the date of the modified mission in comparison to the relative **states** of **readiness** of the aircraft operational on the date of the requested mission. In order to determine the relative **states** of **readiness** , the respective probabilities of failure of the aircraft following completion of the **maintenance** operations may be considered. More particularly, the respective measures of the relative **states** of **readiness** of the aircraft may be based upon an intensity function appropriate for the type of process that describes the **probability** of **failure** of the aircraft ...

...0012] According to another aspect of the present invention, an automated method of analyzing **maintenance** operations performed upon a plurality of repairable systems is provided. According to this aspect, **maintenance** information associated with the plurality of repairable systems is initially analyzed to determine the relative **states** of **readiness** of a plurality of repairable systems. Respective measures of the relative **states** of **readiness** of the repairable systems are then determined based upon the respective probabilities of failure of the repairable systems following completion of the **maintenance** operations. **Maintenance** resources are then allocated based upon the respective measures of the relative **states** of **readiness** of the plurality of repairable systems. In this regard, **maintenance** operations scheduled for the repairable systems that will have the greatest **states** of **readiness** upon completion of the **maintenance** operations may be prioritized. As before, the determination of the relative **states** of **readiness** may be based upon respective probabilities of failure of the repairable systems following completion of the **maintenance** operations. In this regard, the respective measures of the relative **states** of **readiness** of the repairable systems may be based upon an intensity function appropriate for the type of process that describes the probability of failure of the...

...0013] In one embodiment, the automated method of analyzing **maintenance**

operations analyzes **maintenance** operations performed upon the fleet of aircraft. In this regard, the **maintenance** information associated with the plurality of aircraft is initially analyzed to determine the relative **states** of **readiness** of the aircraft upon completion of the **maintenance** operations scheduled for the aircraft. Respective measures of the relative **states** of **readiness** of the aircraft upon completion of the **maintenance** operations scheduled for the plurality of aircraft are then provided and **maintenance** resources are allocated based upon the respective measures of the relative **states** of **readiness** of the aircraft. As before, **maintenance** resources may be allocated by prioritizing the **maintenance** operations scheduled for the aircraft that will have the greatest **state** of **readiness** upon completion of the **maintenance** operations...

...0014] By not only identifying the repairable systems that will be operational on the date of deployment, but providing respective measures of the relative **states** of **readiness** of the repairable systems, the repairable systems that will have the greatest likelihood of successfully completing the task can be selected, thereby maximizing the probability ...

...For example, the aircraft that have the greatest likelihood of successfully completing a mission can be selected in an educated manner based upon the relative **states** of **readiness** of the aircraft which, in turn, is based upon the probability of failure or, conversely, success of the aircraft. Additionally, allocation of **maintenance** resources may be improved according to another aspect of the present invention by analyzing the relative **states** of **readiness** of the plurality of repairable systems, such as a plurality of aircraft, upon the completion of the **maintenance** operations and then scheduling the **maintenance** resources in such a way that the repairable systems that have the greatest **states** of **readiness** are repaired initially

2/3,K/4 (Item 1 from file: 990)

1618084573 18342LLW
Establishment of Class E Airspace: Reduction of Fuel Tank Flammability in Transport Category Airplanes
RegAlert
Monday, July 21, 2008
JOURNAL CODE: GDGC LANGUAGE: English RECORD TYPE: Fulltext
DOCUMENT TYPE: Trade Journal ISSN: N/A
WORD COUNT: 63,289

...paragraph (e) of this section
may be extended by one year, provided that--
(1) No later than December 18, 2008, the certificate holder notifies its **assigned** **Flight** Standards Office or Principal Inspector that it intends to comply with this paragraph;
(2) No later than March 18, 2009, the certificate holder applies for...

...accordance with Sec.
125.201, no person may operate an airplane identified in Table 1 of

this section (including all-cargo airplanes) for which the **State** of Manufacture issued the original certificate of airworthiness or export airworthiness approval after September 20, 2010 unless an Ignition Mitigation Means (IMM) or Flammability Reduction...later than the applicable dates
specified in paragraph (e)(1), (e)(2) or (e)(3) of this section.

(1) Fifty percent of each person's **fleet** of **airplanes** subject to paragraph (d)(1) of this section must be modified no later than September 19, 2014.

(2) One hundred percent of each person's **fleet** of **airplanes** subject to paragraph (d)(1) of this section must be modified no later than September 19, 2017.

(3) For those persons that have only one...

...include
those airworthiness limitations.

(i) The inspection program changes identified in paragraphs (g) and (h) of this section must be submitted to the operator's **assigned** **Flight** Standards Office responsible for review and approval prior to incorporation.

(j) The requirements of paragraph (d) of this section do not apply to airplanes operated...of this section must be modified
no later than September 19, 2014.

(2) One hundred percent of each foreign air carrier or foreign person's **fleet** of **airplanes** subject to paragraph (d)(1) or this section must be modified no later than September 19, 2017.

(3) For those foreign air carriers or foreign...

...Deactivate or remove an IMM or FRM once installed unless it is replaced by a means that complies with paragraph (d) of this section.

(g) **Maintenance** Program Revisions. No foreign air carrier or foreign person may operate an airplane for which airworthiness limitations have been approved by the FAA Oversight Office...

...26.33, 26.35, or 26.37 of this chapter after
the airplane is modified in accordance with paragraph (d) of this section unless the **maintenance** program for that airplane is revised to include those applicable airworthiness limitations.

(h) After the **maintenance** program is revised as required by paragraph (g) of this section, before returning an airplane to service after any alteration for which airworthiness limitations are...

...by Sec. Sec. 25.981, 26.33, 26.35, or 26.37 of this chapter, the foreign person or foreign air carrier must revise the **maintenance** program for the airplane to include those airworthiness limitations.

(i) The **maintenance** program changes identified in paragraphs (g) and (h) of this section must be submitted to the operator's **assigned** **Flight** Standards Office or Principal Inspector for review and approval prior to incorporation.

(j) The requirements of paragraph (d) of this section do not apply to...

...section
may be extended by one year, provided that--

(1) No later than December 18, 2008, the foreign air carrier or foreign person notifies its **assigned** **Flight** Standards Office or Principal Inspector that it intends to comply with this paragraph;

(2) No later than March 18, 2009, the foreign air carrier or...

2/3,K/5 (Item 1 from file: 992)
DIALOG(R)File 992:NewsRoom 2007

1485603674 17UV357T
Air carrier certification and operations: Enhanced airworthiness program for airplane systems and fuel tank safety
RegAlert
Thursday, November 8, 2007
JOURNAL CODE: GDGC LANGUAGE: English RECORD TYPE: Fulltext
DOCUMENT TYPE: Trade Journal ISSN: N/A
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...when it comes to safety
assessments of EWIS. Section 25.1309 does not allow any single failure
to result in catastrophic consequences, regardless of the **failure probability** . The requirements of Sec. 25.1709 are consistent with
those of Sec. 25.1309. We made no changes due to these comments.
Federal Express referred...

...scenario contained in FedEx's comment.
Boeing commented on the part of the Sec. 25.1705 (now Sec.
25.1709) discussion in the NPRM that **states** that an in-flight
entertainment (IFE) system installed on an airplane with subpart H as
part of its type certification basis would be subjected to...will
help ensure that the level of safety provided by the original design is
not degraded. It will also prevent potential safety hazards from
improper **maintenance** and from replacement of original parts with parts
not designed or intended for that particular use.
We have also decided against deleting Sec. 25.1711...

...EWIS components associated with flight-
essential or flight-critical systems be easily identifiable by those
designing and installing modifications, as well as by technicians
performing **maintenance** or repair. If a wire bundle has different
separation requirements as it is routed throughout the airplane, then
those varying separation requirements must be identified...

...to label the component directly with textual data, and that
excessive use of tags could become a source of future contamination.
However, Sec. 25.1711 **states** that other means of identification can be
used if the component cannot be physically marked. For example, the
manufacturer's consistent marking scheme may be...

...will reference CS
25.863.
Because Sec. 25.1723 already requires EWIS components to meet
requirements of Sec. 25.863, it is not necessary to **state** the same
requirement in Sec. 25.1713.
Boeing commented that proposed Sec. 25.1713(c) repeats and
replaces Sec. 25.869(a)(4), except with...an electrical
return path capable of carrying both normal and fault currents
without creating a shock hazard.
GE requested clarification of what constitutes a fault **condition** for

compliance with proposed Sec. 25.1717. It asked if a fault **condition** includes failure of the bonding path, such as physical breakage.

We have revised Sec. 25.1715 as requested by Boeing but have added the phrase...

...commented that the wording of proposed Sec. 25.1725 (now Sec. 25.1719) is slightly different from that recommended by ATSRAC. ATSRAC recommended that it **state** :

Means must be provided to allow for inspection of EWIS and the replacement of its components as necessary for continued airworthiness.

The NPRM proposed Sec...

...number was changed to harmonize with regulations of foreign airworthiness authorities. No other changes have been made.

Boeing suggested that this rule be revised to **state** that EWIS should be protected so it ``* * * cannot be damaged by normal movement of cargo or baggage in the compartment.'' It said this change will clarify requirements. Boeing, GE, and AIA/GAMA stated that **maintenance** personnel need to be trained in proper EWIS handling.

We have decided against revising Sec. 25.1721 in the manner Boeing suggests. This requirement is...

...to these comments.

GE requested that the phrase ``risk of damage'' be deleted from proposed Sec. 25.1727 (now Sec. 25.1721). It stated that **risk** of damage implies control of the **failure** effect of damage that is assumed to occur, as in Sec. 25.901(c). It said that because 14 CFR 25.1309 already adequately controls the relationship between **probability** of a **failure** **condition** and its effect, **risk** of damage should be deleted from proposed Sec. 25.1727.

We believe it is necessary to address both damage and risk of damage. Design and...

...Nacelle, and APU Wiring

GE, Honeywell, and AIA/GAMA commented that engine, nacelle, and APU wiring should be exempt from the proposed EWIS certification and **maintenance** requirements. They said wiring in these areas is extremely rugged, has excellent reliability in service, and is easily accessible for inspection. They further stated that...such robust design and installation. However, we do not agree that it is impossible for an engine wiring failure to cause a hazardous or catastrophic **condition** . The following quote is from the ``Lauda Air B767 Accident Report,'' dated July 21, 1993, issued by the Aircraft Accident Investigation Committee Ministry of Transport...to Appendix H--Instructions for Continued Airworthiness. Section H25.5 is a new requirement. It requires TC applicants and applicants for design change to develop **maintenance** information for EWIS as part of the ICA that are required for design approval. The EWIS ICA must be developed through the use of an...

...reduce the likelihood of its accumulation. The ICA must also include--

Instructions for protections and cautions to prevent accidental damage or contamination to EWIS during **maintenance** ,

alteration, or repairs.
Acceptable **maintenance** practices in a standard format.
[[Page 63385]]
Wire separation requirements as determined under Sec. 25.1707.
Information explaining the EWIS identification method and requirements for...

...EWIS ICA be contained in a single document, easily recognizable as EWIS ICA. They said their current approach is to produce several documents, including the **maintenance** planning data document, airplane **maintenance** manual, and standard wiring practices manual, with appropriate cross-references. These documents may not be EWIS specific. Boeing and AIA/GAMA believe separating EZAP-generated **maintenance** activities from those required by Special Federal Aviation Regulation (SFAR) 88 defeats the intent of the rule and is impractical.
Additionally, Airbus, and GE suggested...

...as an airplane system. We made no changes due to this comment.
3. Standard Wiring Practices Manuals
Airbus commented about the requirement to include acceptable **maintenance** practices in a standard format. Airbus made the point that electronic standard wiring practices manuals (SWPM), in which such **maintenance** practices can be found, are easily searchable. It requested that manufacturers who publish their SWPMs electronically be either exempt from the requirement for a standard...

...to exempt electronic versions of the SWPM from requirements of part 25, Appendix H, H25.5. The objective of this requirement is to ensure that **maintenance** personnel can readily access necessary information. They may work on many different models, so having a standard format will facilitate this. An applicant may propose an alternative ``standard'' format to that described in the AC, as long as it achieves the same objective (again, taking into account that **maintenance** personnel will be working on a range of models). The master breakdown index described in AC 25-26 was developed so that existing non-electronic...

1501 Purpose and definition.	Sec. 91.1501 Purpose and definition.
91..... Sec. 91.1507 Fuel tank system inspection program.	Sec. 91.1507 Fuel tank system **maintenance** program.
121..... Sec. 121.1(g) (new)....	N/A.
121..... Subpart AA--Continued Airworthiness and Safety Improvements.	Subpart Y--Continued Airworthiness and Safety Improvements...

...Sec. 121.901 Purpose and definition.

	Sec. 121.911 Electrical wiring interconnection systems (EWIS) **maintenance** program.
121..... Sec. 121.1111 Electrical wiring interconnection systems (EWIS) **maintenance** program..	
121..... Sec. 121.1113 Fuel tank system **maintenance**	Sec. 121.913 Fuel tank system **maintenance**

	program.	program.
125.....	Sec. 125.1(e) (new)....	N/A
125.....	Subpart M--Continued Airworthiness and Safety Improvements.	Subpart M--Continued Airworthiness and Safety Improvements...
...Sec. 129.101 Purpose	and definition.	and definition.
129.....	Sec. 129.111 Electrical wiring interconnection systems (EWIS) **maintenance** program.	Sec. 129.111 Electrical wiring interconnection systems (EWIS) **maintenance** program.
129.....	Sec. 129.113 Fuel tank system **maintenance** program.	Sec. 129.113 Fuel tank system **maintenance** program.

[[Page 63387]]

2. Continued Airworthiness Subparts and Airworthiness Directives

The Regional Airline Association (RAA) commented that proposed Sec. 121.901(a) (now Sec...

...stand-alone provision, is unlimited in scope. It contended that the requirement can be interpreted to mean that operators must incorporate any future design and **maintenance** changes that a type certificate holder incorporates into its ICA, regardless of their airworthiness status. The RAA said that this would effectively eliminate the need...

...airworthiness directives. The RAA said it therefore has the potential to eliminate operator participation in the rulemaking process for future original equipment manufacturers' recommendations affecting **maintenance** and design of their fleet.

In a similar vein, United Parcel Service (UPS) recommended we not adopt the new subpart for part 121 and instead...

...for comment. The FAA will continue to issue airworthiness directives in accordance with requirements of 14 CFR part 39 when we find that an unsafe **condition** exists in a product and the **condition** is likely to exist or develop in other products of the same type design.

We also disagree that subpart AA should not be created. The...

...that exist in a product and are likely to exist or develop on products of the same type design. Continued airworthiness issues, such as EWIS **maintenance** , affect all transport category airplanes. In addition, using ADs to implement these requirements would mean that ADs would need to be continually issued as new...

...on the cost and feasibility of the manufacturers' proposed requirements. It would be impractical to set up a comment period for each specific set of **maintenance** changes developed by the manufacturers, as the commenter appears to want. However, a substantial cost/benefit analysis is always prepared to support any proposed 14...

...Sec. 121.1101(a), the words ``* * * may include, but are not limited to * * *'' can be interpreted to mean that at a minimum the operator's

maintenance program must incorporate 100% of all design changes and 100% of all ICA, not just the EWIS/FTS design changes and ICAs to be developed...

...Inspectors with oversight responsibility. ATA recommended that the second sentence of Sec. 121.1101(a) be rewritten as follows:

These requirements may include revising the **maintenance** program by incorporating the intent of ...any new design change for which they get approval. An operator altering an airplane to incorporate the new design change would have to update its **maintenance** program ``based on'' the approved ICA. TC holders may also update their ICA in the absence of design changes, but, as under existing regulations, these updates would not be mandatory unless we issue an AD mandating them, which we would do only if necessary to address an unsafe **condition** . Operators may also independently revise their EWIS and fuel tank ICA. Under today's final rule, these changes would have to be approved by their Principal Inspector.

F. Operating Requirements for EWIS (Parts 121 and 129)

1. Requirements for **Maintenance** and Inspection Program Revisions

For those operating under parts 121 and 129, we are establishing, within the new Continued Airworthiness and Safety Improvements subparts, requirements to revise **maintenance** and inspection programs to include **maintenance** and inspection tasks for EWIS. The tasks must be based on ICA developed in accordance with Appendix H.

We have extended the compliance dates for...

...rules to clarify meaning, as discussed below.

2. ICA Developed by Design Approval Holders

Boeing noted that the proposed operational regulations would require that the **maintenance** program revisions be based on ICA developed by the DAH.

[[Page 63388]]

Boeing would like clarification of the interpretation of the term ``based on.'' It...

...long as they meet the applicable requirements. We have revised the operational rules to clarify this flexibility. Deviations from the EWIS or fuel tank system **maintenance** programs that have been developed in accordance with the requirements of SFAR 88 or Appendix H must be approved by the operator's Principal Inspector, who will coordinate the changes with the FAA Oversight Office as appropriate. Similarly, later changes to either the EWIS **maintenance** program or the fuel tank system **maintenance** program must be approved by the operator's Principal Inspector, who will coordinate the changes with the FAA Oversight Office, as appropriate. In some cases...

...become ICA and fall under these requirements.

At the outset, Sec. 121.1111 requires neither ``retrofit'' nor ``design changes.'' It simply imposes requirements for operators' **maintenance** programs. We agree that some clarification is appropriate. As explained in the NPRM, the purpose of Sec. 26.11 is to require type certificate holders...

...all

provisions of paragraphs H25.4(a)(3) and H25.5. Our intent in the operational rules is to require operators to incorporate into their **maintenance** programs all of the EWIS ICA developed for each of their airplanes. For existing airplanes, this would be limited to ICA meeting paragraphs H25.5...

...Sec.
129.111) to clarify these differences.
KLM disagreed with the requirement for operators of all airplanes, regardless of the airplane's age, to implement **maintenance** program inspections and procedures for EWIS. The commenter contended that the amount of exposure to deteriorating factors on new aircraft is limited, so there is negligible benefit to performing additional **maintenance** tasks on wiring. The commenter also pointed out that checking wiring on a new aircraft may even cause more wiring failures due to **maintenance** near the wiring. KLM suggested we consider a threshold for starting the first inspections.
Although older airplanes have been exposed to more stressors that can...

...no changes due to this
comment.
4. ICA for Alterations
British Airways requested that proposed Sec. 121.911 (now Sec. 121.1111) be revised to **state** that if changes to the ICA are required after alterations, incorporation of these changes into the **maintenance** program may be delayed until after the airplane has resumed service, but before it reaches the ``relevant age or flight hours.'' The commenter expressed concern...
...while the
airplane is in a normal operating environment (e.g., at the ramp). It asked whether inspections or incorporation of ICA changes to the **maintenance** program must be completed before resuming operations and, if so, requests a rule change allowing ICA incorporation into **maintenance** programs after the airplane returns to service but before it reaches the ``relevant age or flight hours.''
The only alterations for which EWIS ICA will...

...or
amended TCs. We believe that any of these alterations would be scheduled to occur during a period of allocated downtime such as a scheduled **maintenance** ``C Check.'' The **maintenance** planning for such modifications should include the actions necessary to incorporate additional EWIS or fuel tank ICA into the approved **maintenance** or inspection program. No additional time would be needed for these actions. Accordingly, no changes were made due to these comments.
5. Alaska Operations
Senator Stevens of Alaska stated that this rule will have severe consequences to residents and cargo carriers operating in his **state** . Referencing Section 1205 of the Federal Aviation Reauthorization Act of 1996 (49 U.S.C. 40113(f)), and the uniqueness of aviation in Alaska, Senator...

...not be an adverse effect and that
regulatory distinctions are inappropriate.
Under both EAPAS and the Fuel Tank Safety Rule, manufacturers are required to develop **maintenance** program revisions and make them

available to operators to support their compliance with the operational rules. We have concluded that in the case of both...

...implementing these changes would not have a significant impact. Under EAPAS, the changes would be integrated into existing inspections that are currently performed during heavy **maintenance** checks. The fuel tank tasks, which would be aligned with the EAPAS inspections, would also be performed during these checks. Because these additional inspections would be only a small additional piece of a much more extensive **maintenance** visit, we concluded that they would have no adverse effect on intrastate service in Alaska.

Lynden Air Cargo requested that the L-382G aircraft be...inspector accomplishing a general visual inspection (GVI) or a detailed inspection (DET) of EWIS make a specific determination of airworthiness? The FAA has failed to **state** an objective criteria in its proposed rule (i.e., what will be the accept/reject criteria?).

If there are no actual circuit defects, what corrective...

...induce more problems than are corrected.

The proposed operating rules do not require ``retroactive'' application of design requirements. They do require that operators include EWIS **maintenance** tasks in their **maintenance** programs. Any post-inspection actions are based on results of the GVI or DET. If inspections determine that EWIS components need cleaning or repairing, procedures...

...have the potential to cause damage if not done with care. Precautions for preventing such damage should be part of the operator's overall EWIS **maintenance** program.

7. Non-U.S. Registered Airplanes

Boeing requested that the FAA clarify whether the proposed part 129 rule would affect foreign operators operating non-U.S. registered airplanes into the United **States** . They noted that part 129 usually applies to these operations and it seems unusual that they have been omitted in the proposed rule.

Under International Civil Aviation Organization (ICAO) Annex 7 8, the **state** of registry of an airplane is the **state** responsible for its airworthiness. For this reason, the airworthiness regulations of part 129, including those contained in new subpart B, apply only to U.S.-registered airplanes.

---

7 ICAO's 98 articles, created and accepted at its Chicago Convention, established the privileges and obligations of member **states** . Standards and recommended practices of ICAO are designated as ``Annexes'' to the Convention.

---

8. Taking Airplanes Out of Service

US Airways requested clarification of Sec...

...highest risk of accidental damage may be performed at intervals ranging

from an ``A'' check to a ``1-C'' check, which are normally schedule
d
maintenance intervals. Although we cannot guarantee that an airplane will not have to be taken out of service specifically to accomplish the new EWIS **maintenance** program requirements, we believe these tasks can be scheduled to be performed during other scheduled **maintenance** times. Section 121.1111 does not require tasks to be accomplished at any particular intervals. It only requires that the **maintenance** program for a particular airplane include inspections and procedures for EWIS.
9. Training
The NTSB referred to its recommendation A-00-108 of Sept. 19, 2000, in which it asked the FAA to address the need for improved training of **maintenance** personnel to ensure adequate recognition and repair of potentially unsafe wiring conditions. The NTSB commented that, since non-EWIS **maintenance** actions often compromise EWIS safety, training of all **maintenance** personnel on EWIS **maintenance** and inspection is critical. The board would like us to amend the NPRM to specifically **state** that all **maintenance** personnel must receive EWIS training.
[[Page 63390]]
We agree with the NTSB on the importance of training personnel not directly involved with EWIS **maintenance** and inspection. But the cost of training all groups identified by ATSRAC as people working directly with, indirectly with, or in the vicinity of, EWIS...

...asked the
FAA to address improved reporting of potentially unsafe electrical wiring conditions. It noted that the NPRM holds manufacturers and operators responsible for proper **maintenance** and inspection of EWIS. The board contends there can be no quantitative measurement of how well the **maintenance** and inspection system is performing without an effective mechanism to collect basic data, examine the findings, and provide reporting about performance.
The NTSB noted that...on aircraft age, hours,
and cycles from the Airclaims database. The resulting data set allows the user to identify trends in service difficulties as a **fleet** of **aircraft** ages.
Also, with the 1995 creation of the Air Transport Association (ATA) code 97 for electrical wiring, precise reporting of electrical problems is possible. In...

...faa.gov/isdr/SDRQueryControl.ASP?vB=IEandcD=32 [2]).
G. Operating Requirements for Fuel Tank Systems (Parts 91, 121, 125, and 129)
1. Requirements for **Maintenance** and Inspection Program Revisions
This rule includes provisions for operators to revise their **maintenance** programs by adding **maintenance** tasks for fuel tanks. These **maintenance** tasks must be based on ICA that have been developed in accordance with SFAR 88 or Sec. 25.1529 and Appendix H and approved by...

...rules.
When this rule was proposed in October 2005, our intent was to set the same operator compliance date for the fuel tank and EWIS **maintenance** program revisions. This would have allowed both sets of tasks to be added at the same time and required that the **maintenance** program be revised only once. As discussed earlier, the rulemaking process took longer than expected. At this time, we do not want to delay inclusion of the fuel tank tasks into **maintenance** . Thus, while

the compliance date for the EWIS **maintenance** revision requirements of Sec. Sec. 121.1111 and 129.111 has been changed, the compliance date for this fuel tank **maintenance** revision requirement remains December 16, 2008, the date that was originally proposed. We have, however, changed the date by which the certificate holder must submit **maintenance** instructions for auxiliary fuel tanks to the FAA Oversight Office. That date is now June 16, 2008. The list of airplanes excluded from the requirements...well
as TC holders for the affected airplane models, must develop ICA as required by SFAR 88, and that the operator is required to develop **maintenance** instructions for field-approved auxiliary fuel tanks. The clarified language regarding field-approved auxiliary fuel tanks was included in paragraphs 91.1507(b), 121.913...

...also allow
adequate time for the FAA's Oversight Office to review and approve the operator-developed ICA and for the operators to revise their **maintenance** programs accordingly by December 16, 2008.
4. Original Configuration and Auxiliary Fuel Tanks
United Airlines referred to the statement in the NPRM that new **maintenance** programs must be developed based on the actual configuration of the aircraft. It asked if this is intended to include only major alterations (STCs), or...

...the NPRM, we are revising these requirements to eliminate reference to the ``actual configuration'' of the fuel tank system. Instead, these requirements clarify that operators' **maintenance** programs must address the fuel tank system of the airplane as originally configured and auxiliary fuel tanks later installed. All auxiliary fuel tank installations are...

...related issue, under the operational rules adopted as part of the Fuel Tank Safety Rule (Sec. 121.370(b)), operators were required to revise their **maintenance** programs to include fuel tank safety instructions, regardless of whether TC and STC holders provided such revisions, as required by SFAR 88. In this final rule, we revise these operational requirements to require that operators revise their **maintenance** programs to incorporate fuel tank ICA developed by TC holders, ICA developed by the operator for field-approved auxiliary fuel tanks, and ICA developed by...

...STC design configuration. However, if it
appears STC holders will not provide timely support for the operators, we will consider enforcement action.
5. Inspection and **Maintenance** Program Terminology
Boeing commented that Sec. 125.507 refers to a fuel tank system inspection program; whereas the companion sections in parts 91, 121, and 129 refer to a fuel tank system **maintenance** program. It asked whether this difference was intentional, and, if so, what is the purpose of the difference.
Boeing identifies a longstanding difference in terminology...

...regulations applicable to air carrier operations (parts 121 and 129) and other operations (parts 91 and 125). For air carriers, we commonly use the term `` **maintenance** program'' to refer to the required program for inspection and **maintenance** of aircraft (see Sec. Sec. 121.367 and 129.14). For other operations, we use the term ``inspection

program,'' which is typically narrower in scope...for a mechanic. A detailed discussion can be found in the ``key assumptions and labor rates'' section of the final regulatory evaluation.

4. The Regional **Airplane Fleet**

The Regional Airline Association (RAA) requested we revise the cost-benefit analysis because it cites no regional transport category airplane accidents or incidents to indicate...

...or extremely improbable, depending on the severity of the failure.

The regional jet (RJ) fleet uses the same EWIS components, design and installation methods, and **maintenance** techniques as the larger transports. Although RJs typically do not have in-flight entertainment systems and the same ...requires less intensive training than the program identified by commenters. The training required by this final rule does not apply to production personnel, but to **maintenance** and inspection personnel only, as required by Sec. 121.375. Therefore we did not consider the cost of having production personnel in training. We believe...

...as a result of these comments.

RAA stated that using care when working around wiring, being knowledgeable about electrical systems, and teaching technicians that a **maintenance** /alteration task is not complete until the area is thoroughly cleaned are simply common sense and need not be mandated. The commenter expressed confidence these **maintenance** practices already exist among its members, and said that specific retrofit requirements can be more efficiently mandated by Airworthiness Directives.

RAA said one member suggested it would enhance its training not on how to develop inspection programs, but as a preventative **maintenance** aide for technicians. The commenter suggested the FAA (with industry assistance) issue an ``Electrical Systems Installation and Repair Standard Practices Hand Book'' that supplements or...

...so tight as to increase the possibility of chafing within the bundle would be more beneficial than inspecting after the fact. The commenter said that **availability** of quality training to many technicians will result in a cultural change in the industry that can roll over to other practices.

The final regulatory evaluation clearly shows that the benefits exceed the costs of the proposed EWIS **maintenance** requirements. As stated in the NPRM preamble discussion, investigations of previous accidents and examinations of other airplanes shows that deteriorated wiring, corrosion, improper wire installation and repairs, and contamination of wire bundles with various contaminants are common conditions in today's transport category fleet. Current **maintenance** practices do not adequately address wiring components, wiring inspection criteria are too general, and unacceptable conditions, such as improper repairs and installations, are not described in enough detail in **maintenance** instructions. We commend the RAA member airline for volunteering to enhance its EWIS training program and we encourage other companies to do the same. A...

...proposed AC120-XX into a C-check would increase C-check time by a minimum of 1 day, resulting in 15,000 extra days of **maintenance** a year for operators, at a cost of $150 million annually.

Our final regulatory evaluation accounts for additional cost

estimates in part due to the...

...engine-mounted EWIS components will result in an additional day being added to the length of a C-check (assuming that the frequency of the **maintenance** tasks require them to be completed on a C-check cycle). Based on data provided by one airplane manufacturer, we estimate that an additional 1...
...be necessary
based on the results of applying EZAP to the engine zone. Since we anticipate that these additional tasks will be incorporated into scheduled **maintenance** down-times, no additional time for gaining access to the engines will be required. We expect that these additional tasks will be performed during scheduled **maintenance** visits and the corresponding costs are contained in the cleaning, inspection, and downtime sections of the regulatory evaluation.
GE contended that supporting manufacturer compliance with...

...engine installation. It would also be less reliable, leading to an incremental unreliability of 0.4 cable seizures per million attempted engine shutdowns, and incremental **maintenance** costs. GE estimated an average annual cost to operators of $1,000,000.
We do not concur with GE's cost estimate for Sec. 25...to perform the EZAP process detailed
in draft Advisory Circular 120-XX (now in the DAH EZAP AC).
Most importantly, increased costs associated with enhanced **maintenance** of wiring on all in-service airplanes.
Boeing asked that we include these costs in the analysis to get a true understanding of the burden associated with the projected benefits of the proposed rule. AIA/GAMA requested we include costs to operators for enhanced EWIS **maintenance** and updated labor rates for engineers as well as these additional items:
Additional DAH manufacturing costs for future part 25 TC and STC products that include new subpart H (regardless of seating capacity).
Training for **maintenance** personnel. This should include existing airplanes subject to new Sec. 121.911 (now Sec. 121.1111), Sec. 125.507, and Sec. 129.111 EWIS ICA...

...well as
future airplanes that include new subpart H and associated EWIS ICA requirements.
Additional general aviation operator (part 91/135) costs associated with enhanced **maintenance** of EWIS on all future airplanes that include new part 25 subpart H and associated EWIS ICA requirements. This should consider additional airplane downtime and necessary training for **maintenance** personnel.
Additional repair station costs to update FAA-approved **maintenance** training manuals and provide training to their **maintenance** personnel.
In response to these comments, the FAA estimates the costs for ongoing coordination necessary to ensure ongoing communication and cooperation between the applicants and...

...certification costs.
EZAP costs for existing TCs, future TCs, and future STCs.
SWPM update costs.
EWIS identification costs for TCs and STCs.

Training costs for **maintenance** personnel.
Planning costs to part 121 operators.
Cleaning/inspection costs to part 121 operators.
Downtime costs to part 121 operators.

12. Previous Rulemaking

The RAA requested that the cost-benefit analysis be revised to account for previous rulemaking actions that mitigate **likelihood** that an **accident** /incident similar to those that prompted this rulemaking action will occur in the future. The RAA requested that if benefits of a revised cost-benefits...fleet as reported by operators, and evaluates them with respect to the Intrusive Inspection Report. This final rule will change the certification, design, installation, and **maintenance** practices for EWIS, which, up to this time, have changed very little since the jet age began. In addition, the physical environments in which wires...a new rule requiring that the electrical system and equipment be designed to minimize risk of electrical shock and burns to the crew, passengers, and **maintenance** and servicing personnel during normal operations. This rule adopts the current JAR standard and is in line with current industry practice. It is unchanged from the form in which it was proposed.

AIA/GAMA and GE requested that the term `` **maintenance** '' in Sec. 25.1360 be limited to line **maintenance** .

We infer from GE's comment that it wants Sec. 25.1360 amended to revise the phrase `` **maintenance** personnel'' to read ``line **maintenance** personnel.'' We are not adopting GE's request. We believe the intent of the requirement is clear because of the phrase ``using normal precautions.'' **Maintenance** personnel, whether working line or shop **maintenance** , are trained to use caution when working on, or around, live electrical circuits. Section 25.1360 requires, in part, that the airplane's electrical system be designed so that shock hazards to **maintenance** personnel are minimized when they are taking normal precautionary measures to avoid shock hazards. We made no changes due to this comment.

4. Electrical Supplies...redundancy, the labeling must also include component part number, function, and separation requirements for bundles. This specificity of labeling will be required to ensure that **maintenance** can be handled properly and with the appropriate caution for maintaining the safety features the wiring system was designed to provide. The information marked on the wires will be used by **maintenance** personnel for repair and cautionary tasks, and by modifiers so that original safety features are retained during modifications. The future airplane manufacturer and anyone who...

...and Appendix H will apply the requirement for EWIS ICA to future applicants for TCs. EWIS ICA will be used by operators to prepare their **maintenance** programs. This requirement is necessary to ensure that wiring is properly maintained and inspected to avoid problems that could affect safety.

(3) Section 26.11...

...the operators for the operators' timely compliance with the rule.

(4) Anyone operating an airplane under part 121 will be required to revise their existing **maintenance** program to incorporate the **maintenance** and inspection tasks for EWIS contained in

the EWIS ICA. The information incorporated into the **maintenance** program will be used by **maintenance** personnel to maintain the integrity of airplane wiring systems. This requirement is necessary to ensure that wiring is properly maintained and inspected to avoid problems that could affect safety.

(5) As a result of the revised **maintenance** programs that will be required for airplanes operating under part 121, **maintenance** personnel will be performing inspections and **maintenance** procedures to address safety issues specific to wiring systems. Although this final rule does not specifically require new training, existing Sec. 121.375 requires that certificate holders or persons performing **maintenance** have a training program to ensure that persons determining the adequacy of such work (including inspectors) are fully informed about the procedures and techniques involved and are competent to perform them. To comply with this requirement in relation to requirements for revised **maintenance** programs for EWIS included in this final rule, certificate holders will be required to develop any additional training program needed to ensure that the appropriate personnel are adequately prepared to carry out the revised **maintenance** programs.

(6) The revision to part 25 Appendix H requires that future manufacturers include acceptable EWIS practices in their ICA, presented in a standard format. This information will be used by **maintenance** personnel for wiring **maintenance** and repairs. The requirement is necessary because information about cautionary tasks during **maintenance** that can prevent situations that could compromise safety need to be available to **maintenance** personnel. Standard wiring practices manuals, in which this information is presented, often differ from manufacturer to manufacturer and so are difficult for **maintenance** personnel to find specific information in. The requirement for a standard format is meant to correct this. Because of this rule, manufacturers will change their...

...6,283	471,225 EZAP.		
2d.....	ICA Approval.....	96	7,200
3.....	Compliance Plan Development.	128	9,600
4.....	Operators Revise **Maintenance** Program.	2,550	191,268
5.....	Training Development..	2,208	165,600
6.....	SWPM.....	734	55,040
	Total.....	39,346	2,837,600

1a. The FAA estimates that an...annual estimated cost to the manufacturer to develop the compliance plan is $9,600, with annual hours of 128.

4. Operators will revise their existing **maintenance** program to incorporate the **maintenance** and inspection tasks for EWIS contained in the ICA. Over the period of analysis, the FAA estimates 63,756 total hours, or 2,550 average annual hours required to revise existing **maintenance** programs. Using the burdened labor cost for an engineer, the average annual planning cost is $191,268.

5. The estimated cost to develop training considers...

...Third, the Trade Agreements Act (Pub. L. 96-39) prohibits agencies from setting standards that create unnecessary obstacles to the foreign commerce of the United **States** . In developing U.S.

standards, this Trade Act requires agencies to consider international standards and, where appropriate, that they be the basis of U.S...

...assessment of the costs, benefits, and other effects of proposed or final rules that include a federal mandate likely to result in the expenditure by **state** , local, or tribal governments, in the aggregate, or by the private sector, of $100 million or more annually (adjusted for inflation with base year of...

...have a significant economic impact on a substantial number of small entities; (3) will not create unnecessary obstacles to the foreign commerce of the United **States** ; and (4) will not impose an unfunded mandate on **state** , local, or tribal governments, or on the private sector by exceeding the threshold identified above. While this rule is not economically significant as defined in...of analysis--25 Years, 2006 through 2030

Burdened labor rate (as shown in key assumptions and labor rates in regulatory evaluation)

--Aerospace engineers--$75/hour

-- **Maintenance** personnel--$50/hour

Value of fatality avoided--Value of fatality avoided--$3.0 million (Source: ``Revised Departmental Guidance, Treatment of Value of Life and Injuries...

...120.3 million present value) with no commensurate increase in benefits.

Alternative 2--Explicitly require EWIS training for other groups of people in addition to **maintenance** workers. The groups and additional costs are:

Flight deck crew--$126 million ($76 million present value).

Cabin crew--$63 million ($38 million present value).

The...

...that this rulemaking is necessary to improve aviation safety, and that this final rule will decrease the frequency of these events. By introducing the new **maintenance** , inspection, and design criteria for airplane wiring contained in this final rule, we are ensuring that there will be a substantial decrease in the number...

...Approve ICA For Existing TCs..	0.156	0.151
Approve ICA for Future STCs...	0.556	0.284
Approve Inspection and **Maintenance** Program.....	0.828	0.801
Compliance Plan.....	0.240	0.232
Total Approval Costs.....	1.9	1.5
Total Costs.....	416	233

Final Regulatory Flexibility Determination

The Regulatory Flexibility...applicants.

There will not be a significant impact on a substantial number of small carriers as a result of this final rule.

The current United **States** part 25 airplane manufacturers include: Boeing, Cessna Aircraft, Gulfstream Aerospace, Learjet (owned by

Bombardier), Lockheed Martin, McDonnell Douglas (a wholly-owned subsidiary of The Boeing...

...96-39) prohibits Federal agencies from establishing any standards or engaging in related activities that create unnecessary obstacles to the foreign commerce of the United **States** . Legitimate domestic objectives, such as safety, are not considered unnecessary obstacles. The statute also requires consideration of international standards and, where appropriate, that they be...

...that may result in an expenditure of $100 million or more (adjusted annually for inflation with the base year 1995) in any one year by **State** , local, and tribal governments, in the aggregate, or by the private sector; such a mandate is deemed to be a ``significant regulatory action.'' The FAA...

...rule under the principles and criteria of Executive Order 13132, Federalism. We determined that this action will not have a substantial direct effect on the **States** , or the relationship between the national Government and the **States** , or on the distribution of power and responsibilities among the various levels of government, and the refore does not have federalism implications.

Section 1205 of...energy action'' under Executive Order 12866, and it is not likely to have a significant adverse effect on the supply, distribution, or use of energy.

Availability of Rulemaking Documents

You can get an electronic copy using the Internet by--

(1) Searching the Federal eRulemaking Portal http://www.regulations.gov [3]

(2...and

* * * * *

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7. Amend Sec. 21.50 by revising paragraph (b) to read as follows:

Sec. 21.50 Instructions for continued airworthiness and manufacturer's **maintenance** manuals having airworthiness limitations sections.

* * * * *

(b) The holder of a design approval, including either the type certificate or supplemental type certificate for an aircraft, aircraft... procedure consistent with safety in the kinds of operation authorized. Loads not required in controlled flight need not be considered for the two-engine-inoperative **condition** on airplanes with three or more engines.

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18. Revise Sec. 25.1353 to read as follows:

Sec. 25.1353 Electrical equipment and installations.

(a...

...b) Storage batteries must be designed and installed as follows:

(1) Safe cell temperatures and pressures must be maintained during any probable charging or discharging **condition** . No uncontrolled increase in cell temperature may result when the battery is recharged (after previous complete discharge)--

(i) At maximum regulated voltage or power;

(ii) During a flight of maximum duration; and
(iii) Under the most adverse cooling **condition** likely to occur in service.
(2) Compliance with paragraph (b)(1) of this section must be shown by test unless experience with similar batteries and...

...temperature sensing and over-temperature warning system with a means for disconnecting the battery from its charging source in the event of an over-temperature **condition** ; or
(iii) A battery failure sensing and warning system with a means for disconnecting the battery from its charging source in the event of battery...

...Precautions against injury.
(a) Shock. The electrical system must be designed to minimize risk of electric shock to crew, passengers, and servicing personnel and to **maintenance** personnel using normal precautions.
(b) Burns. The temperature of any part that may be handled by a crewmember during normal operations must not cause dangerous...

...fluids or vapors which may be present during normal operation or as a result of spillage, if such damage or contamination could create a hazardous **condition** .
(d) Unless compliance with Sec. 25.1309(b) is provided by the circuit protective device required by Sec. 25.1357(a), electric motors and transformers...be designed and installed with adequate physical separation from other EWIS and airplane systems so that an EWIS component failure will not create a hazardous **condition** . Unless otherwise stated, for the purposes of this section, adequate physical separation must be achieved by separation distance or by a barrier that provides protection...installed with adequate physical separation from fuel lines and other fuel system components, so that:
(1) An EWIS component failure will not create a hazardous **condition** .
(2) Any fuel leakage onto EWIS components will not create a hazardous **condition** .
(f) Except to the extent necessary to provide electrical connection to the hydraulic systems components, EWIS must be designed and installed with adequate physical separation from hydraulic lines and other hydraulic system components, so that:
(1) An EWIS component failure will not create a hazardous **condition** .
(2) Any hydraulic fluid leakage onto EWIS components will not create a hazardous **condition** .
(g) Except to the extent necessary to provide electrical connection to the oxygen systems components, EWIS must be designed and installed with adequate physical separation from oxygen lines and other oxygen system components, so that an EWIS component failure will not create a hazardous **condition** .
(h) Except to the extent necessary to provide electrical connection to the water/waste systems components, EWIS must be designed and installed with adequate physical separation from water/waste lines and other water/waste system components, so that:
(1) An EWIS component failure will not create a hazardous **condition** .
(2) Any water/waste leakage onto EWIS components will not create a

hazardous **condition** .
(i) EWIS must be designed and installed with adequate physical separation between the EWIS and flight or other mechanical control systems cables and associated system components, so that:
(1) Chafing, jamming, or other interference are prevented.
(2) An EWIS component failure will not create a hazardous **condition** .
(3) Failure of any flight or other mechanical control systems cables or systems components will not damage the EWIS and create a hazardous **condition** .
(j) EWIS must be designed and installed with adequate physical separation between the EWIS components and heated equipment, hot air ducts, and lines, so that:
(1) An EWIS component failure will not create a hazardous **condition** .
(2) Any hot air leakage or heat generated onto EWIS components will not create a hazardous **condition** .
(k) For systems for which redundancy is required, by certification rules, by operating rules, or as a result of the assessment required by Sec. 25...

...and other types of mechanical damage.
Sec. 25.1709 System safety: EWIS.
Each EWIS must be designed and installed so that:
(a) Each catastrophic failure **condition** --
(1) Is extremely improbable; and
(2) Does not result from a single failure.
(b) Each hazardous failure **condition** is extremely remote.
Sec. 25.1711 Component identification: EWIS.
(a) EWIS components must be labeled or otherwise identified using a consistent method that facilitates identification...

...must be placed along the wire, cable, or wire bundle at appropriate intervals and in areas of the airplane where it is readily visible to **maintenance** , repair, or alteration personnel.
[[Page 63408]]
(2) If an EWIS component cannot be marked physically, then other means of identification must be provided.
(c) The...be designed and installed to minimize damage and risk of damage to EWIS by movement of people in the airplane during all phases of flight, **maintenance** , and servicing.
(c) EWIS must be designed and installed to minimize damage and risk of damage to EWIS by items carried onto the aircraft by...

...Continued
Airworthiness (ICA) applicable to EWIS as defined by Sec. 25.1701 that are
[[Page 63409]]
approved by the FAA and include the following:
(1) **Maintenance** and inspection requirements for the EWIS developed with the use of an enhanced zonal analysis procedure that includes:
(i) Identification of each zone of the...

...of combustible material accumulation.
(vi) Instructions for protections and caution information that will minimize contamination and accidental damage to EWIS, as

applicable, during performance of **maintenance** , alteration, or repairs.
(2) Acceptable EWIS **maintenance** practices in a standard format.
(3) Wire separation requirements as determined under Sec. 25.1707.
(4) Information explaining the EWIS identification method and requirements for...

...Purpose and scope.
26.3 Definitions.
26.5 Applicability table.
Subpart B--Enhanced Airworthiness Program for Aging Systems 26.11 Electrical wiring interconnection systems (EWIS) **maintenance** program.
Authority: 49 U.S.C. 106(g), 40113, 44701, 44702 and 44704.
Subpart A--General
Sec. 26.1 Purpose ...made after the effective date of the identified rule.
Subpart B--Enhanced Airworthiness Program for Aging Systems
Sec. 26.11 Electrical wiring interconnection systems (EWIS) **maintenance** program.
(a) Except as provided in paragraph (g) of this section, this section applies to transport category, turbine-powered airplanes with a type certificate issued...which an auxiliary fuel tank is installed under a field approval, before June 16, 2008, the operator must submit to the FAA Oversight Office proposed **maintenance** instructions for the tank that meet the requirements of Special Federal Aviation Regulation No. 88 (SFAR 88) of this chapter.
(c) After December 16, 2008...Sec.
121.1101 Purpose and definition.
121.1103 [Reserved]
121.1105 [Reserved]
121.1107 [Reserved]
121.1109 [Reserved]
121.1111 Electrical wiring interconnection systems (EWIS) **maintenance** program.
121.1113 Fuel tank system **maintenance** program.
Subpart AA--Continued Airworthiness and Safety Improvements
Sec. 121.1101 Purpose and definition.
(a) This subpart requires persons holding an air carrier or operating...

...under part 119 of this chapter to support the continued airworthiness of each airplane. These requirements may include, but are not limited to, revising the **maintenance** program, incorporating design changes, and incorporating revisions to Instructions for Continued Airworthiness.
(b) For purposes of this subpart, the ``FAA Oversight Office'' is the aircraft...
...Administrator.
Sec. 121.1103 [Reserved]
Sec. 121.1105 [Reserved]
Sec. 121.1107 [Reserved]
Sec. 121.1109 [Reserved]
Sec. 121.1111 Electrical wiring interconnection systems (EWIS) **maintenance** program.
(a) Except as provided in paragraph (f) of this section, this section applies to transport category, turbine-powered airplanes with a

type certificate issued...

...7500 pounds or more.
(b) After March 10, 2011, no certificate holder may operate an airplane identified in paragraph (a) of this section unless the **maintenance** program for that airplane includes inspections and procedures for electrical wiring interconnection systems (EWIS).
(c) The proposed EWIS **maintenance** program changes must be based on EWIS Instructions for Continued Airworthiness (ICA) that have been developed in accordance with the provisions of Appendix H of...

...2011, before returning an airplane to service after any alterations for which EWIS ICA are developed, the certificate holder must include in the airplane's **maintenance** program inspections and procedures for EWIS based on those ICA.
(e) The EWIS **maintenance** program changes identified in paragraphs (c) and (d) of this section and any later EWIS revisions must be submitted to the Principal Inspector for review...

...Page Herald Type 300
(11) Avions Marcel Dassault--Breguet Aviation Mercure 100C
(12) Airbus Caravelle
(13) Lockheed L-300
Sec. 121.1113 Fuel tank system **maintenance** program.
(a) Except as provided in paragraph (g) of this section, this section applies to transport category, turbine-powered airplanes with a type certificate issued...

...an auxiliary fuel tank is installed under a field approval, before June 16, 2008, the certificate holder must submit to the FAA Oversight Office proposed **maintenance** instructions for the tank that meet the requirements of Special Federal Aviation Regulation No. 88 (SFAR 88) of this chapter.
(c) After December 16, 2008, no certificate holder may operate an airplane identified in paragraph (a) of this section unless the **maintenance** program for that airplane has been revised to include applicable
[[Page 63412]]
inspections, procedures, and limitations for fuel tanks systems.
(d) The proposed fuel tank system **maintenance** program revisions must be based on fuel tank system Instructions for Continued Airworthiness (ICA) that have been developed in accordance with the applicable provisions of...

...tank ICA are developed under SFAR 88 or under Sec. 25.1529 in effect on June 6, 2001, the certificate holder must include in the **maintenance** program for the airplane inspections and procedures for the fuel tank system based on those ICA.
(f) The fuel tank system **maintenance** program changes identified in paragraphs (d) and (e) of this section and any later fuel tank system revisions must be submitted to the Principal Inspector...an auxiliary fuel tank is installed under a field approval, before June 16, 2008, the certificate holder must submit to the FAA Oversight Office proposed **maintenance** instructions for the tank that meet the requirements of Special Federal Aviation Regulation No. 88 (SFAR 88) of this chapter.

(c) After December 16, 2008...of Sec. 129.1 to read as follows:
Sec. 129.1 Applicability and definitions.
* * * * *
(b) Operations of U.S.-registered aircraft solely outside the United **States** . In addition to the operations specified under paragraph (a) of this section, Sec. Sec. 129.14 and 129.20 and subpart B of this part also apply to U.S.-registered aircraft operated solely outside the United **States** in common carriage by a foreign person or foreign air

carrier.
* * * * *
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54. Add Sec. 129.101 to subpart B to read as follows:
Sec...

...S. registered airplane in common carriage to support the continued airworthiness of each airplane. These requirements may include, but are not limited to, revising the **maintenance** program, incorporating design changes, and incorporating revisions to Instructions for Continued Airworthiness.
(b) For purposes of this subpart, the ``FAA Oversight Office'' is the aircraft...
...103 to subpart B.
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56. Add Sec. 129.111 to subpart B to read as follows:
Sec. 129.111 Electrical wiring interconnection systems (EWIS) **maintenance** program.
(a) Except as provided in paragraph (f) of this section, this section applies to transport category, turbine-powered airplanes with a type certificate issued...

...10, 2011, no foreign person or foreign air carrier may operate a U.S.-registered airplane identified in paragraph (a) of this section unless the **maintenance** program for that airplane includes inspections and procedures for EWIS.
(c) The proposed EWIS **maintenance** program changes must be based on EWIS Instructions for Continued Airworthiness (ICA) that have been developed in accordance with the provisions of Appendix H of...

...S.-registered airplane to service after any alterations for which EWIS ICA are developed, the foreign person or foreign air carrier must include in the **maintenance** program for that airplane inspections and procedures for EWIS based on those ICA.
(e) The EWIS **maintenance** program changes identified in paragraphs (c) and (d) of this section and any later EWIS revisions must be submitted to the Principal Inspector or Flight...

...Airbus Caravelle
(13) Lockheed L-300
0
57. Add Sec. 129.113 to subpart B to read as follows:
Sec. 129.113 Fuel tank system **maintenance** program.
(a) Except as provided in paragraph (g) of this section, this section applies to transport category, turbine-powered airplanes with a type certificate issued...

...a field approval, before June 16, 2008, the
foreign person or foreign air carrier operating the airplane must
submit to the FAA Oversight Office proposed **maintenance** instructions
for the tank that meet the requirements of Special Federal Aviation
Regulation No. 88 (SFAR 88) of this chapter.
(c) After December 16, 2008, no foreign person or foreign air
carrier may operate a U.S.-registered airplane identified in paragraph
(a) of this section unless the **maintenance** program for that airplane
has been revised to include applicable inspections, procedures, and
limitations for fuel tank systems.
[[Page 63414]]
(d) The proposed fuel tank system **maintenance** program revisions
must be based on fuel tank system Instructions for Continued
Airworthiness (ICA) that have been developed in accordance with the
applicable provisions of...

...under SFAR 88, or under Sec. 25.1529 in effect on June 6,
2001, the foreign person or foreign air carrier must include in the
maintenance program for the airplane inspections and procedures for the
fuel tank system based on those ICA.
(f) The fuel tank system **maintenance** program changes identified in
paragraphs (d) and (e) of this section and any later fuel tank system
revisions must be submitted to

2/3,K/6 (Item 2 from file: 992)
DIALOG(R)File 992:NewsRoom 2007

1357586073 17LV2N1S
Airworthiness directives: Bombardier
RegAlert
Monday, March 5, 2007
JOURNAL CODE: GDGC LANGUAGE: English RECORD TYPE: Fulltext
DOCUMENT TYPE: Trade Journal ISSN: N/A
WORD COUNT: 9,117

...previously, we have revised the AFM
procedures to provide a much more efficient procedure and a significant
improvement for recovery from the stated unsafe condition.
Request To Remove First **Flight** of Day Functional Test
Air Wisconsin requests that we remove the requirement for the
airplane's first flight of the day functional test specified in the
supplemental NPRM. The commenter **states** that the requirement was
removed from the AFM at Revision 55 in July 2001 and therefore, there
was no requirement to do this action for...

...September 28, 2006, and paragraph B.(2) of the
Accomplishment Instructions of the service bulletin specifies to do
Sagem Service Bulletin HSTCU-27-011. Comair **states** that operators
cannot ``do'' the Sagem service bulletin because units must be returned
to Sagem for the upgrade. Comair **states** that this makes the
installation a replacement of the HSTCU with the upgraded HSTCU. Comair
states that the airplane **maintenance** manual (AMM) procedure for
installation of the HSTCU, task 27-41-01-400-801, requires the same
functional check and operational check called out in Instructions in
Bombardier Service Bulle

tin
601R-27-147 **states** ``Do the Avionics service bulletin HSTCU-27-011,'' this AD requires only that the HSTCU be installed and does not require operators to perform the...

...have
not revised this AD in this regard.
Request To Revise Cost Paragraph
RAA also request that we revise the cost of the installation. RAA **states** that one of its members pointed out that the cost to upgrade to a unit ``-10'' is $15,000.
We do not agree to revise...

...disallow
the removal of the circuit breaker identification collars that is allowed in paragraph (l) of the supplemental NPRM (paragraph (o) of this AD). ALPA **states** that procedures in place at several carriers rely on the crew's ability to readily identify the circuit breakers, and the existing circuit breaker collars...

...Page 9671]]
FAA's Determination and Requirements of This AD
These airplanes are manufactured in Canada and are type certificated for operation in the United **States** under the provisions of section 21.29 of the Federal Aviation Regulations (14 CFR 21.29) and the applicable bilateral airworthiness agreement. Pursuant to this...

...evaluated all pertinent information, and determined that AD action is necessary for airplanes of this type design that are certificated for operation in the United **States** .
Therefore, we are issuing this AD to supersede AD 2006-22-06 and AD 98-13-24 and to continue to require the actions specified...

...action due to
the new service information, we have changed certain paragraph identifiers and added others.
FAA's Determination of the Effective Date
An unsafe **condition** exists that requires the immediate adoption of this AD; therefore, providing notice and opportunity for public comment before the AD is issued is impracticable, and...Comments will be available in the AD docket shortly after the Docket Management System receives them.
Authority for This Rulemaking
Title 49 of the United **States** Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, Section 106, describes the authority of the FAA Administrator. Subtitle VII...

...and procedures the Administrator
finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe **condition** that is likely to exist or develop on products identified in this rulemaking action.
Regulatory Findings
We have determined that this AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the **States** , on the relationship between the national government and the **States** , or on the distribution of power

and responsibilities among the various levels of government.
    For the reasons discussed above, I certify that the regulation:
    1...

...Jet Series 100 and 440)
airplanes may be referred to by their marketing designations as
RJ100, RJ200, RJ440, CRJ100, CRJ200, CRJ440, and CL-65.
Unsafe **Condition**
    (d) This AD results from reports of trim problems including
uncommanded trim, trim
[[Page 9672]]
in the opposite direction to that selected, loss of trim...at the
FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton,
Washington; or at the National Archives and Records Administration
(NARA). For information on the **availability** of this material at
NARA, call 202-741-6030, or go to:
http://www.archives.gov/federal-register/cfr/ibr-locations.html [3]
.
    Issued in...

2/3,K/7 (Item 3 from file: 992)
DIALOG(R)File 992:NewsRoom 2007
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13471107639 17L6393Q
Air carrier certification and operations: National air tour safety standards
RegAlert
Tuesday, February 13, 2007
JOURNAL CODE: GDGC LANGUAGE: English RECORD TYPE: Fulltext
DOCUMENT TYPE: Trade Journal ISSN: N/A
WORD COUNT: 35,198

...Administration, 800 Independence Avenue, SW., Washington, DC
20591; telephone: (202) 267-8011; facsimile: (202) 267-7971; e-mail:
bruce.glendening@faa.gov [1] .
SUPPLEMENTARY INFORMATION:
Availability of Rulemaking Documents
    You can get an electronic copy using the Internet by taking the
following steps:
    (1) Go to the search function of the...

...small'' by definition.
Authority for This Rulemaking
    The FAA's authority to issue rules regarding aviation safety is
found in Title 49 of the United **States** Code. This rule is issued under
the authority granted to the Administrator by Congress in 49 U.S.C.
section 40103. Under section 40103(b...Operations
VIII. Regulatory Notices and Analyses
IX. The Amendment--Final Rule Language
I. Background
    Air Tour operations are conducted in all parts of the United **States**
over various types of terrain. This terrain includes, but is not
limited to, national parks, fairgrounds, and urban, coastal, and
mountainous areas that range from...response to the NTSB
recommendations.

B. SFAR 71 Should Not Be the Model

A number of commenters, including the Experimental Aircraft Association (EAA), the United **States** Air Tour Association (USATA), the Helicopter Association International (HAI), Blue Hawaiian Helicopters, Air Vegas Airlines, and the National Air Transportation Association (NATA), questioned the FAA...

...taking more action to improve safety. Specifically, Papillon Airways Inc., commenting on behalf of the Tour Operators Program of Safety (TOPS), cited two reports that **state** SFAR 71 had no effect on the accident rate reduction since its enactment. One report posited that the altitude restriction in SFAR 71 has actually...

...the decrease in accidents. Purely voluntary improvements that significantly increase safety would be unlikely to coincide so neatly with the implementation of SFAR71.

The United **States** has many areas with rugged terrain, bodies of water, and vertical cliffs that are subject to rapidly changing weather patterns. Although air tours may vary as to what kind of terrain is flown over, the FAA's concerns over flights conducted throughout the United **States** are the same. For example, flight over water presents a risk to passengers regardless of whether that water is the Pacific Ocean, Lake Mead, or...Stearman, the Waco UPF and YKS models, and stated, ``While some of the above aircraft manufactured in the 1940's may have Pilot Operating Handbooks, **Maintenance** and Parts Manuals, the aircraft vintage 1929-1939 have no such luxury; they are operated in accordance with markings, placards and operations limitations. To bring...

...not impossible.'' They suggest that, instead of requiring certification under part 119, part 91 operators be required to submit a Written Statement of Operation that **states** who will do what flights, where, when, and in what equipment. This statement could be renewed annually along with the submission of a flight hour...

...this [[Page 6894]] segment of aviation is most often operated by small one or two plane operations constrained by the high cost of aircraft ownership, **maintenance** , rising fuel costs, and seasonal weather. PartAir, Inc., stated that the NPRM is ``an ill-considered and misplaced effort at improving `safety' through elimination-by...in an historic aircraft. There are hundreds of part 135 small one or two-plane operations that are also constrained by high cost, aircraft ownership, **maintenance** , rising fuel cost and seasonal weather. In response, we have decided to retain this 25-mile exception with some minor revisions.

``Barnstorming'' operators using aircraft...

...apply for and receive an LOA. The LOA, obtained through the operator's FSDO, will include information such as the operator's name, address, management, **maintenance** responsibility, aircraft information, and the operator's drug and alcohol prevention program. Sufficient time is provided in the rule for operators to apply for and...

...hire aircraft operations.

7
Today, the FAA issues exemptions for World War II era airplanes with Experimental and Restricted Category airworthiness certificates that include extensive **maintenance** and operational requirements.

VI. Comments on Part 91 Operations
A. Charity, Nonprofit, and Community Events
Before discussing the specific comments about part 91 operations, we...in exchange for
breakfast and a flight over their town. A nonprofit event is an event that raises funds for a nonprofit entity organized under **State** or Federal law, with one of the entity's purposes being the promotion of aviation safety. The sponsor or the pilot(s) of nonprofit event...
Four-Event Limit for Charitable and Non-Profit Organizations and the One-Event Limit for Community Events
AFA and Sopwith Ltd. objected to the proposed **condition** in Sec. 119.1(e)(11) limiting charitable rides conducted under part 91 to four events per organization per year with each event lasting no...
...Museum, but also many other nonprofit
organizations in the mid-coast Maine area. The museum stated that it has high standards placed on its aircraft, **maintenance** , and pilots. The museum also boasted that, although it has given more than 3,000 rides, it has maintained a perfect safety record, incurring neither...limit is not new, and has been included in exemptions issued for years. For example, Exemption 7112C,
10
issued to AOPA on May 20, 2004 **states** in
condition and limitation 11:

10
Exemption No. 7112 was originally issued to AOPA ...grounded by the 500-hour flight time requirement proposed for private pilots. It is likely some of these commenters were operating under a 500-hour **condition** and limitation for private pilots in an exemption today. For example, Exemption No. 7830 was issued to EAA for ``Young Eagles'' flights. In that exemption...

...pleasure activity for the
passenger.''
The conditions and limitations in Exemption No. 7830 are more restrictive than the proposal or this final rule. Below is **condition** and limitation 2 from Exemption No. 7830:
2. Each pilot who conducts flights under this exemption must--
a. Hold at least a private pilot certificate...receive comments from EAA regarding the 500-hour minimum for private
pilots conducting charitable flights. EAA is the holder of Exemption No. 7830, which clearly **states** a 500-hour minimum for private pilots as discussed above. We received some comments from pilots conducting operations under this exemption who are completely unaware...

...The report shows that pilots with fewer than 500 hours of total time accounted for 34% of all accidents (28% of all fatal). The report **states** specifically that ``The first 500 hours of a pilot's flying career are the most critical, with 34.4 percent of the total and 28...a

grant of exemption to conduct any future
flights of this kind. Section 61.113 now refers private pilots to Sec.
91.146 and clearly **states** that all operations ...rule, the four sections
proposed in the NPRM are
eliminated and a new Sec. 136.5 addresses only minimum altitudes and
standoff distances in the **State** of Hawaii taken from the regulation
formerly known as SFAR 71. This approach allows us to delete SFAR 71.
Commentators objected to many aspects of...inflatable life preserver,
but we do not require that specific type. When donned by the passenger,
an inflatable life preserver must stay in an uninflated **state** until
after exiting the aircraft in an emergency. It is easier for occupants
to keep the life preserver on from before takeoff until after landing...
compared to conducting all
operations within gliding distance of the shore. Papillon also provided
details on the expected costs of installing floats, including purchase
costs, **maintenance** costs, and added weight that it asserted would
reduce the passenger load by one person per trip. Papillon estimated
that the cost of floats alone...throughout the day. The operators take into
consideration weight
and balance, gross weight, duration of flight, fuel and route of flight
in ever-changing meteorological **condition** 's, according to Papillon.
Since these conditions change, often after departure, the pilot must
maintain the flexibility of making decisions in flight as climatic
conditions...Trade Agreements Act (19 U.S.C. 2531-2533) prohibits
agencies from setting standards that create unnecessary obstacles to
the foreign commerce of the United **States** . In developing U.S.
standards, this Trade Act also requires agencies to consider
international standards and, where appropriate, use them as the basis
of U...
...assessment of
the costs, benefits, and other effects of proposed or final rules that
include a Federal mandate likely to result in the expenditure by **State** ,
local, or tribal governments, in the aggregate, or by the private
sector, of $100 million or more annually (adjusted for inflation.)
In conducting these analyses...impact on a substantial number of small
entities, but it will not reduce barriers to international trade and
does not impose an unfunded mandate on **state** , local, or tribal
governments, or on the private sector. These analyses, available in the
final regulatory evaluation supporting today's rule, are summarized
below.
Final...

...Legal Basis
The objective of this proposal is to provide a higher and uniform
level of safety for all commercial air tours.
Under the United **States** Code, the FAA Administrator is required to
consider the following matter, among others, as being in the public
interest: assigning, maintaining, and enhancing safety and...over the same
period.
Affordability Analysis
The FAA lacks specific revenue and profit data for most of the
entities affected by this rule. The United **States** Census Bureau data
for 2002 provides annual receipt information for Scenic and Sightseeing
Transportation, Other (NAICS 4879) which includes airplane and
helicopter operators.
14
The...of 1979 prohibits Federal agencies from

establishing any standards or engaging in related activities that create unnecessary obstacles to the foreign commerce of the United **States** . Legitimate domestic objectives, such as safety, are not considered unnecessary obstacles. The statute also requires Federal agencies to consider international standards and, where appropriate, use...

...Mandates Reform Act of 1995 (Public Law 1
04-4) is
intended, among other things, to curb the practice of imposing unfunded Federal mandates on **State** , local, and tribal governments. Title II of the Act requires each Federal agency to prepare a written statement assessing the effects of any Federal mandate...

...that may result in the expenditure of $100 million or more (adjusted annually for inflation with the base year 1995) in any one year by **State** , local, and tribal governments, in the aggregate, or by the private sector; such a mandate is deemed to be a ``significant regulatory action.'' The FAA...19,370

Section 136.7 requires air tour operators to provide passenger briefings. There are numerous options for presenting the required information given the current **state** of electronics. Nation-wide charitable and non-profit organizations could produce videos and distribute to local chapters at very little cost. Commercial air tour operators...rule under the principles and
criteria of Executive Order 13132, Federalism. We determined that this action would not have a substantial direct effect on the **States** , on the relationship between the national Government and the **States** , or on the distribution of power and responsibilities among the various levels of government, and therefore would not have federalism implications. Regulations Affecting Intrastate Aviation...

...of the National Environmental Policy Act. In
1994 the original SFAR 71 established procedural, operational, and equipment safety requirements for air tour aircraft in the **state** of Hawaii. This final rule maintains those requirements. Neither SFAR 71 nor this final rule involves any significant impacts to the human environment and the...
...of the Convention on International Civil Aviation
(61 stat.1180).
Special Federal Aviation Regulation No. 71--Special Operating Rules for Air Tour Operators in the **State** of Hawaii
0
4. Remove SFAR No. 71 from part 91.
0
5. Add Sec. 91.146 to read as follows:
Sec. 91.146 Passenger...charitable event or non-
profit event.

Non-profit event means an event that raises funds for the benefit of a non-profit organization recognized under **State** or Federal law, as long as one of the organization's purposes is the promotion of aviation safety.

(b) Passenger carrying flights for the benefit...

...place of business (if different from business
address);

(4) Name of person responsible for management of the business;

(5) Name of person responsible for aircraft **maintenance** ;
(6) Type of aircraft, registration number(s), and make/model/series; and
(7) An Antidrug and Alcohol Misuse Prevention Program registration.
(d) The Operator must...who does not hold an air carrier certificate or an operating certificate is permitted to use a person who is otherwise authorized to perform aircraft **maintenance** or preventive **maintenance** duties and who is not subject to anti-drug and alcohol misuse prevention programs to perform--
* * * * *
PART 135--OPERATING REQUIREMENTS: COMMUTER AND ON-DEMAND OPERATIONS...

...who operates under the provisions of Sec. 91.147 of this chapter is permitted to use a person who is otherwise authorized to perform aircraft **maintenance** or preventive **maintenance** duties and who is not subject to anti-drug and alcohol misuse prevent programs to perform--
* * * * *
PART 136--COMMERCIAL AIR TOURS AND NATIONAL PARKS AIR...have the FAA reconsider those Letters of Authorization.
Sec. 136.5 Additional requirements for Hawaii.
No person may conduct a commercial air tour in the **State** of Hawaii unless they comply with the additional requirements and restrictions in appendix A to part 136.
Sec. 136.7 Passenger briefings.
(a) Before takeoff...0
22. Add new appendix A to part 136 as follows:
Appendix A to Part 136--Special Operating Rules for Air Tour Operators in the **State** of Hawaii
Section 1. Applicability. This appendix prescribes operating rules for airplane and helicopter visual flight rules air tour flights conducted in the **State** of Hawaii under 14 CFR parts 91, 121, and 135. This appendix does not apply to:
(a) Operations conducted under 14 CFR part 121 in...no person may conduct an air tour in Hawaii:
(a) Below an altitude of 1,500 feet above the surface over all areas of the **State** of Hawaii, and,
(b) Closer than 1,500 feet to any person or property; or,
(c) Below any altitude prescribed by federal statute or regulation...

2/3,K/8 (Item 4 from file: 992)
DIALOG(R)File 992:NewsRoom 2007

1332589033 17K92QY8
Air carrier certification and operations: Multi-engine airplanes; extended operations
RegAlert
Tuesday, January 16, 2007
JOURNAL CODE: GDGC LANGUAGE: English RECORD TYPE: Fulltext
DOCUMENT TYPE: Trade Journal ISSN: N/A
WORD COUNT: 84,449

...estimates for the probability of decompression on a commercial airplane are on the order of 1 x 10-6 or 1 x 10-7

per **flight** hour. Airbus, in a recent exemption **request** for the A380 stated in comments to the docket that there have been nearly 3,000 depressurization events since 1959.
11
It notes the probability...

...is particularly true
during periods of intense solar flare activity.
Datalink capability (both HF and SATCOM) is limited by message length and ability to clearly **state** the issue or message. A bigger limitation on datalink is the full attention required by the flight crew to interact with a small and compactly...

...because the crew could not
communicate with air traffic using the HF radio. The purpose of this flight test was to simulate an airplane failure **condition** that made SATCOM unavailable and was conducted in a part of the world beyond the range of normal VHF radio signals. The test pilot decided...minutes or less or for all-cargo
operations. For part 135 operations, passenger recovery plans are only required in the North Polar Region. An ETOPS **maintenance** program is not required for passenger ...approved airplanes in service. A 12-month rolling average IFSD rate is
calculated by dividing the number of in-flight shutdowns that occur in an **airplane** **fleet** by the total number of engine-hours
13
that
accumulate in that fleet during the same 12-month period. Each month, the number of in...

...of the engines installed on that
airplane must issue service information to the operators of that airplane-engine combination, as appropriate, to maintain the world-**fleet** IFSD rate at or below the regulatory limit. Operators may incorporate this service information as part of their reliability program to maintain the IFSD rate of their **fleet** at or below the world-fleet limits.
Paragraph 121.374(i)(1) identifies the IFSD rate limits that prompt an investigation into whether there are...

...below the world-fleet IFSD rate objective.
Several factors may cause in-flight shutdowns that contribute to an operator's IFSD rate exceeding the world- **fleet** rate. First, there may be causes of in-flight shutdowns for which the manufacturer has not issued service information. There may be existing service information available to prevent causes of in-flight shutdowns that the operator has not yet incorporated into its fleet. An operator may have unique **maintenance** or operational procedures that unknowingly cause in-flight shutdowns. Finally, an operator may experience a higher IFSD rate for no known reason other than statistical...

...Another factor affecting an operator's IFSD rate is the numerical effect that a single in-flight shutdown has on the rate of a small **fleet** of **airplanes** . An IFSD rate of 0.01 per 1,000 engine-hours results in an in-flight shutdown approximately once every 100,000 engine-hours. A...

...operating an average of 10 hours a
day would accumulate 2,000 engine-hours per day or 730,000 engine-hours
in 12 months. This **fleet** of **airplanes** could experience seven in-
[[Page 1818]]
flight shutdowns during that 12-month period and still have an IFSD
rate below the 0.01 limit. A 10- **airplane** **fleet** of the same type
operated in the same manner would accumulate only 73,000 engine-hours
in a 12-month period. One in-flight shutdown on the 10- **airplane** **fleet**
would result in an IFSD rate of 0.014, which is above the 0.01 limit.
Thus, one in-flight shutdown on an operator of a small **fleet** of
airplanes can place their fleet above the limit. To further compound
the impact of fleet size, an in-flight shutdown that occurs in June of
one year continues to count in the IFSD rate until the next June. A
single in-flight shutdown would place the operator of the 10- **airplane**
fleet above the 0.01 limit for an entire year.
This one factor showing the magnified effect an in-flight shutdown
has on the IFSD rate...

...our intent and address
these commenters' concerns. First, we have replaced ``in-flight'' with
``when an airplane is airborne'' which more clearly indicates that a
condition for an in-flight shutdown is that the airplane is in the air
(wheels not touching the ground). There has been some disagreement in
the...that, when taken, would result in a rate of 0.02
per 1,000 engine-hours or less.
15

15
The NPRM did not clearly **state** in proposed paragraph
21.4(b)(2) that a reduction in the IFSD rate from 0.05 to 0.02 for
120-minute ETOPS was linked to compliance with a CMP document that
was required as a **condition** for an airplane's ETOPS approval. We
have revised the language of this paragraph to clarify this intent.

The Air Transport Association (ATA) concurs with...c) is inconsistent
with
AC 39-8, which stated that any IFSD rate less than 2 x 10-4
per cycle is not an unsafe **condition** . We disagree with GE. AC 39-8
provides general policy the FAA Engine and Propeller Directorate uses
as a guideline for determining whether an unsafe **condition** exists for
engines used in all types of airplane operations. Since it is advisory
in nature, this policy is subject to change.
Proposed paragraph 21.4(c) stated the FAA will review the IFSD rate
to determine if an unsafe **condition** exists. The FAA will review all in-
service problems to determine if an unsafe **condition** exists and may
issue ADs as necessary to correct each unsafe **condition** found. If each
individual cause for an in-flight shutdown does not constitute an
unsafe **condition** , the FAA has the discretion to determine that a high
IFSD rate by itself constitutes an unsafe **condition** and may issue an AD
mandating a revised CMP document containing several corrective actions
that collectively will bring the IFSD rate back down to a...

...The inclusion of type design requirements and reliability
validation methods in the rule has been objected to by the JAA and the
UK CAA. They **state** a regulatory approach is too prescriptive and does
not allow any flexibility for alternative reliability methods. These

commenters add that the design materials are already included as objective requirements in Title 14 of the Code of Federal Regulations. Further, they **state** that the reliability validation process should be included as interpretive material to be agreed upon at the time of application.

17

The FAA believes the...is not a necessary element of the rule. Dassault will have an
opportunity to comment on the associated advisory circular under a separate notice of **availability** .

2. Additional Airworthiness Requirements for Approval of an Airplane-Engine Combination for ETOPS (Part 25, Appendix K)

The NPRM proposed adding a new appendix K the part 25 ETOPS AC under a separate notice of **availability** .

Although paragraph K25.1.1 would require an applicant to consider the flight crew's and passengers' physiological needs following failures during a maximum length...

...develop the
performance data an operator will need for compliance with the fuel planning requirements of parts 121 and 135.

The JAA and UK CAA **state** the terms ``load of ice'' and ``too much drag'' in the proposed appendix are not appropriate language for regulatory material because they lack precision. Airbus...

...potential icing conditions during an ETOPS diversion at engine-inoperative or decompression altitudes.

The NPRM proposed requirements to meet this objective, but did not clearly **state** that continued safe flight and landing at engine inoperative and decompression altitudes in icing conditions applies to all of the flight phases during an ETOPS...

...with ice accretions on the
protected and unprotected areas are considered, but not specifically mentioned. The FAA has revised this final rule to more clearly **state** which flight phases and associated icing conditions must be considered during an ETOPS diversion. Paragraph K25.1.3(a)(2), requires that the airplane must...while adding the icing conditions encountered during an altitude-
limited diversion to those factors currently evaluated under Sec. 25.1419.

Boeing, Dassault, and Airbus all **state** additional guidance for this rule is needed in an associated advisory circular. Dassault and Airbus stated the NPRM would require analytical and flight testing to...Page 1824]]
exposure to icing conditions during basic certification of the airplane for compliance with Sec. 25.1093(b). This evaluation includes the ground operating **condition** , which historically has been the most severe operating environment for an APU in icing conditions. This finding correlates with the commenter's own experience. However...

...engine airplane service
experience indicates that depressurization events almost never occur in cruise or during the ETOPS portion of the flight. It goes on to **state** that engine failures do not put three- and four-engine airplanes at

icing altitudes. Airbus contends that there is no support for applying the type...

...airplanes certified for ETOPS greater than 180 minutes must be equipped with at least three independent electrical generation sources.

The JAA and the UK CAA **state** that the second and third electrical system requirements proposed in the NPRM are objective requirements already covered in part 25 and JAR 25. The FAA...system failures, rather than the number of generators, should determine if an aircraft is qualified for a route.

The FAA agrees that the level of **risk** of a system **failure** should be commensurate with its effect on the safety of the airplane. The airplane system assessments required by Sec. 25.1309 do exactly as New... ...suppression system information and other limiting airplane systems' time-capability should be defined in the airplane flight manual. We have revised this final rule to **state** that the applicant must define the system time-capability of each ETOPS Significant System that is time-limited under appendix K (K25.1.3(c... design. The first would require that the system supply fuel to the engines at a pressure required by the engine type certificate for any failure **condition** not shown to be extremely improbable. The second would require one fuel boost pump in each tank and at least one crossfeed valve to be...the meaning of the rule and have added them to the final rule as paragraph (l), (l)(i) and (l)(ii) with editorial changes to **state** the requirement in proper regulatory language. The following paragraphs proposed in the NPRM have been re-numbered sequentially.

When using suction feed to comply with...

...include a fourth main electrical generator instead of a back-up generator system. We have broadened the requirement of K25.1.4(a)(2) to **state** that for two-engine airplanes to be certified for ETOPS beyond 180 minutes, one fuel boost pump in each main tank and the actuation capability...to clarify that the APU reliability and starting requirements apply only if an APU is needed to comply with that appendix K.

Appendix K--Engine **condition** monitoring (K25.1.5)

The NPRM proposed that an applicant must develop procedures for engine **condition** monitoring in accordance with part 33, appendix A.

Transport Canada recommended the FAA eliminate the term `` **condition** monitoring'' because its use was discontinued in reliability centered **maintenance** and **Maintenance** Steering Group MSG-3, and contends there is an inherent safety risk associated with mixing terminologies and **maintenance** program development processes. Transport Canada recommended a harmonized and standardized approach for setting terminology and **maintenance** program requirements.

Transport Canada recommended substantial changes to the proposal to permit manufacturers, operators, and regulatory authorities to participate in a structured **maintenance** review board process for the development of an airplane ETOPS **maintenance** program and engine health assessment program.

Transport Canada made some interesting points, but they involve concepts that are beyond the scope of the proposed ETOPS rule, which

was to codify the existing ETOPS standard contained in AC 120-42A. This advisory circular used the term ``engine **condition** monitoring'' which has been successfully applied since its inception. Transport Canada's other suggested changes would involve a level of integration that has never been...

...future long-term goals by introducing such concepts into this rule without a much larger review in the context of that effort.
Appendix K--Configuration, **maintenance** , and procedures (CMP) (K25.1.6)
The NPRM proposed that any configuration, **maintenance** , and operational standards necessary to maintain appropriate reliability ...in the CMP document
into the illustrated parts catalog, the Instructions for Continued Airworthiness required by Sec. 25.1529, or the airplane flight manual. It **states** a separate CMP document is duplicative for a new airplane being evaluated for ETOPS as part of a basic type certificate program.
[[Page 1828]]
The...

...compliance with the CMP requirements to determine if an airplane may be added to a carrier's operations specifications.
Since the CMP requirements are a **condition** for the ETOPS approval, they have to be in an FAA approved document. The Instructions for Continued Airworthiness required by Sec. 25.1529 must be...
...did not have corrective actions for some
causes if the IFSD rate was at an acceptable level without these corrective actions. They go on to **state** the intent of the ARAC proposal was to ensure an acceptable IFSD rate for the ETOPS approval being sought.
These commenters propose similar changes to...that we will respond to any cause of an engine in-flight
shutdown or loss of thrust control that we determine to be an unsafe **condition** even if the IFSD rate meets the required rate. In such a case, we will issue an airworthiness directive (AD) requiring corrective action on all airplanes that may fail from the same cause. If the FAA determines an unsafe **condition** would exist only during the ETOPS portion of a flight, we would require the corrective action be specified in the CMP document as a **condition** for ETOPS approval of the airplane under the provisions of Sec. 21.21(b)(2). That paragraph requires an airplane to have no feature or...

...the issuance of a type certificate. In addition, the FAA reiterates that an operator must comply with the provisions of the CMP document as a **condition** for ETOPS operational approval under part 121.
Boeing stat
ed that the NPRM unintentionally requires a more comprehensive airplane systems assessment under the proposed service...

...ETOPS significant system failures while the Early ETOPS method would have required the applicant to identify specific corrective actions for ``relevant'' design, manufacturing, operational and **maintenance** problems. Also, the proposed Early ETOPS method relevant experience assessment would not require corrective actions if the nature of the problem is such that it...

...from the proposal that the
flight test requirements are related specifically to ETOPS operations.

Boeing stated that it is not necessary for every conceivable failure **condition** to be demonstrated. It says that the intent of the rule is to codify AC 120-42A, paragraph 8.d.(3), which was meant to...

...systems, or
group 2 systems whose failure would be more hazardous during an ETOPS diversion. To clarify this intent, Boeing proposes changing the rule to **state** a flight test must be conducted to validate the adequacy of the airplane's flying qualities, performance, and the flight crew's ability to safely...
...approach to the design, testing, and monitoring of a new airplane-engine combination. This method contains several elements designed to minimize the number of design, **maintenance** or operational problems that could result in engine in-flight shutdowns or diversions. This method also includes elements to demonstrate that the airplane systems have...

...The applicant must design the propulsion system to preclude failures or malfunctions that could result in an in-flight shutdown. The applicant must validate all **maintenance** and operational procedures for ETOPS significant systems. There are ground and flight test requirements and a problem-tracking and resolution system requirement the FAA will...the scope of this requirement to require testing only
for systems defined as ``time limited systems,'' and those for which the occurrence of any failure **condition** is probable, that is, greater than 1 x 10-5 per flight hour.
The FAA believes the proposed rule was clear in stating that the...test airplane or airplanes used for the
airplane demonstration in accordance with the tasks defined in the proposed Instruction for Continued Airworthiness to establish their **condition** for continued safe operation. These inspections or tests must be conducted in a manner to identify abnormal conditions that could result in an in-flight...

...wear on moving parts.
BALPA said that a visual inspection is inadequate for some ETOPS significant systems. BALPA recommended a change in this section to **state** there must be an assessment of the ability of essential components or systems to function within their specified performance and tolerance limits by appropriate test...

...The instructions for continued
airworthiness required by Sec. 25.1529 define appropriate inspections or tests to establish that a system or component is in a **condition** for safe operation. However, these are not necessarily ``visual'' inspections. As such, we have changed paragraph K25.2.2(g)(4), and the same requirement...

...system
must undergo an on-wing inspection or test in accordance with the tasks defined in the proposed Instructions for Continued Airworthiness to establish their **condition** for continued safe operation. We have included the qualifier ``on-wing'' to clarify that we are not requiring any equipment be removed from the airplane...service history that is consistent with our expectations for an airplane approved for ETOPS. After further consideration, we find a comparison with any non-ETOPS **fleet** of **airplanes** would not be consistent with the objectives of this

rule. An applicant can predict the type and frequency of the failures and malfunctions expected to...criteria to
ETOPS significant systems only.

We are not making the suggested change. The only systems that would be relevant in assessing an airplane's **readiness** for ETOPS would be those whose failure could impact the safety of ETOPS. By definition, an ETOPS significant system means an airplane system, including the...

...part 33 amendments
require engine manufacturers to address all ETOPS relevant malfunctions (e.g., lost of thrust control or in-flight shutdown) and design-related **maintenance** errors that have occurred in the manufacturer's current FAA-certified engine models. The part 33 amendments also include a test requirement for these ``early...with Sec. 33.201 is required, FAA will include a discussion in advisory material for the use of a Type Certificate Data Sheet Note to **state** that Sec. 33.201 has been complied with (i.e., ETOPS eligibility granted), along with the applicants demonstrated diversion time from that test.

The JAA...
...of this
requirement by future rulemaking if service data so dictates.

2. Engine Instructions for Continued Airworthiness

Appendix A to part 33 proposed an engine **condition** monitoring program to ensure continuing engine reliability.

Transport Canada recommended the FAA delete the rule, or replace the term `` **condition** monitoring'' with ``engine health assessment programs'' which is a more descriptive term. It added that a power assurance check methodology should not be required in...

...engine is installed in an
identified airplane and when the operational role of that airplane has been defined. Transport Canada concluded the development of ETOPS **maintenance** and health assessment programs would be most effectively managed when the airplane's total **maintenance** program is being developed.

The FAA does not agree with eliminating the term `` **condition** monitoring'' from the rule to be replaced with the term ``engine health assessment''. The agency believes either term is adequate, but will retain the currently used and proposed term `` **condition** monitoring''. Compliance with this section is only required when an applicant desires ETOPS eligibility under Sec. 25.1535. Compliance with this section is not required...for
this exception in its recommended rule, upon which the NPRM was based. We believe ARAC intended that this exception cover special flights conducted for **maintenance** purposes to evaluate airplane problems that occurred on a previous flight. Such a flight may include a thrust reduction. However, we do not see how an intentional thrust reduction for **maintenance** troubleshooting purposes could be confused with the intent of this requirement in Sec. 21.4(a)(6), which would be a thrust reduction in direct...

...backup'' systems and that the
backup function could be provided by another equivalent primary system. We agree with Boeing that these sections may not clearly **state** the intended requirement. We also agree that they may be combined into one. In order to clarify the rule, we have replaced the two NPRM...

...issue appropriate service information
to the operators. The implementation of such service information would be conducted under the operating certificate for the operator.
X. Operator **Maintenance** Requirements
A. Continuous Airworthiness **Maintenance** Program (CAMP)
The premise of an ETOPS **maintenance** program is to continually provide airworthy airplanes that will prevent mechanically related diversions. Under this concept, engines are designed and tested to assure an acceptable level of in-flight shutdowns in the worldwide fleet. Similarly, other key airplane systems are designed and tested for enhanced airplane reliability. ETOPS **maintenance** practices reduce diversions through disciplined procedures like engine **condition** monitoring, oil consumption monitoring, aggressive resolution of any identified reliability issues, and procedures that avoid human error during the **maintenance** of airplane systems and engines.
Maintenance issues are addressed in Sec. 121.374 of the final rule. Before flying ETOPS, a certificate holder operating two engine airplanes must develop an ETOPS ``continuous airworthiness **maintenance** program'' (CAMP) and provide the necessary training to ensure those airplanes are maintained at the highest level of safety. The elements of an ETOPS-approved...

...the CMP document or the type design document for each airplane and engine combination; (2) an ETOPS pre-departure service check; (3) procedures limiting dual **maintenance** ; (4) procedures verifying corrective action to ETOPS significant systems; (5) ETOPS task identification; (6) centralized **maintenance** control procedures; (7) an ETOPS parts control program; (8) a reliability or enhanced continuing analysis and surveillance system (CASS); (9) propulsion system monitoring; (10) an engine **condition** monitoring program; (11) an oil consumption monitoring program; (12) an APU in-flight start program; (13) **maintenance** training for ETOPS; (14) an ETOPS **maintenance** document; and (15) procedures to have the initial program and subsequent revisions approved by the FAA's certificate holding district office (CHDO).
The requirement is to ``develop and follow a continuous airworthiness **maintenance** program based on the manufacturer's **maintenance** program or one currently approved for the operator and be supplemented for ETOPS for each airframe and engine combination.'' Each operator's current **maintenance** program must be approved by its principal **maintenance** inspector via operations specifications. Continental and United commented that it was the understanding of the ARAC that each operator's approved ETOPS **maintenance** program would, by in-service demonstration, be accepted. If the currently approved program contains all **maintenance** elements necessary for ETOPS, then it will be adequate without change. However, after evaluating its current program, an operator may have to supplement its program...

...there is no justification for
incorporation of the ETOPS supplements. Qantas agreed
[[Page 1836]]
with the approval requirements for ETOPS and notes that the robust **maintenance** programs have contributed to the success of ETOPS. It found, however, that this success has brought on increased operational restrictions for political reasons that are not based on safety.
The FAA strongly believes that all operators would benefit from an ETOPS **maintenance** program. However, the FAA agrees with many of the

commenters that the cost of implementing this new requirement for airplanes with more than two engines...

...this cost cannot be justified based on the current level of safety achieved by the combination of engine reliability and the engine redundancy of this **fleet** of **airplanes** .

Airbus and UK CAA cited confusion regarding when ETOPS **maintenance** requirements apply. The elimination of ETOPS **maintenance** program requirements for all part 121 operations for airplanes with more than two-engines eliminates most of the confusion. Part 121, Appendix P has also been amended to provide any remaining clarification necessary. An operator's **maintenance** program for all two-engine ETOPS airplanes, regardless of diversion time, must comply with Sec. 121.374.

B. Limitations on Dual **Maintenance**

The FAA has included provisions in today's rule to prevent dual **maintenance** on two-engine ETOPS significant systems during the same routine or non-routine visit. This requirement is a codification of existing policy and is necessary to recognize and preclude common cause human failure modes without proper verification processes or operational test prior to conducting ETOPS.

Many ETOPS **maintenance** requirements focus on preventing human error from threatening flight safety. Of these, common cause failures, where the same mistakes are made more than once during **maintenance** , are the greatest threat to long-range operational safety in these airplanes. Since 1982, the FAA has recorded ten multiple engine failure events resulting from **maintenance** errors.

FedEx, KLM, and IATA commented that additional ETOPS dual **maintenance** limitations are unnecessary since requirements are found in existing **maintenance** programs such as those identified in the manufacturers **Maintenance** Planning Document (MPD).

The FAA disagrees that dual **maintenance** limitations for all ETOPS operations are unnecessary. We also disagree that dual **maintenance** limitations for ETOPS already exist and are identified in an airplane's MPD. The FAA agrees an MPD appendix provides a critical systems list. However...

...incumbent on the operator to have processes in place to avoid common cause failure modes. Section 121.374(c)(ii) addresses those situations where dual **maintenance** cannot be avoided, providing specific requirements under those circumstances. Operators need to identify their ETOPS significant systems with the assistance of the manufacturers in order to adequately address dual **maintenance** requirements that may arise during scheduled and unscheduled **maintenance** .

FedEx noted part 121 operators already have a Required Inspection Item (RII) program to eliminate **maintenance** errors and believes this program will discover any problems arising from dual **maintenance** . Although the FAA agrees an operator's current RII procedures may be used as one method to ensure proper **maintenance** of ETOPS significant systems, it is not necessarily sufficient by itself to avoid dual **maintenance** risks. Furthermore, the FAA does not believe ETOPS certificate holders would want to include all their ETOPS significant system items into their RII program, nor is the FAA advocating it. Verification of ETOPS dual **maintenance** , when unavoidable, can include an RII visual inspection as one method of verification, but additional methods may need to be employed to meet ETOPS dual **maintenance** ground verification requirements.

ATA, United, Continental and others suggested we change the NPRM's proposed dual **maintenance** provisions. The FAA agrees and has revised the final rule language. The FAA's intent is for operators to package routine **maintenance** tasks so dual **maintenance** is never scheduled on the same **maintenance** visit.

Obviously, it is best never to perform dual **maintenance** since a major cause of airplane diversions and turnbacks due to mechanical failures is common-cause human factors. However, the FAA understands unforeseen situations may arise necessitating unscheduled dual **maintenance** on an airplane. The FAA expects operators to have in place procedures that prevent identical mistakes being made on two systems when dual **maintenance** is accomplished. These procedures must be included in the operator's ETOPS **Maintenance** Document.

C. **Maintenance** Actions

1. ETOPS Pre-Departure Service Check

ATA stated the pre-departure check is specifically designed for a two-engine airplane and to extend this...

...human error. FedEx, KLM and IATA commented that this check would add man-hours and costs due to the new oil consumption, verification, and dual **maintenance** requirements associated with the pre-departure service check.

The FAA, as stated previously, has removed this requirement along with all ETOPS **maintenance** program elements for airplanes with more than two engines. For two-engine ETOPS the FAA believes the pre-departure service check is a significant factor...

...operator and based on ETOPS significant systems verification and historical operational data. Accordingly, the check's content varies significantly among operators.

The operator's ETOPS **maintenance** program should include necessary training requirements and work form task identification to eliminate confusion. This is one reason for having each operator develop a pre-departure check tailored to its own operation based upon the equipment and performance history of the operator's fleet.

2. Engine **Condition** Monitoring Program

ATA commented it is unnecessary for three- and four-engine airplanes to have an engine **condition** monitoring program since current practices have served the part 121 operators adequately for the last 30 years. Many certificate holders currently use engine **condition** monitoring programs for their three- and four-engine airplanes as an economic tool to detect engine deterioration and to reduce full thrust take off requirements. The ETOPS engine **condition** monitoring program is required to ensure engine inoperative flight can be safely conducted in the event of long diversions.

The FAA acknowledges these comments and has removed this requirement along with all ETOPS **maintenance** program elements for airplanes with more than two engines.

[[Page 1837]]

3. Oil Consumption Monitoring Program

ATA, FedEx, KLM and IATA commented that it is...

...rate there is no justification for requiring such a program.

The FAA agrees with these comments and has removed this requirement along with all ETOPS **maintenance** program elements for airplanes with

more than two engines.
4. Verification Procedures
ATA stated the FAA provided no justification for its proposed verification program and...

...arises in the future can be specifically dealt with through the AD process. It appears the commenter may be confusing the AD process with routine **maintenance** procedures. This type of verification is in no way related to an AD.
ATA and others commented that there is no justification for having a...
...that
goes beyond what is already required by a CASS.
The FAA agrees with these comments and has removed this requirement along with all ETOPS **maintenance** program elements for airplanes with more than two engines
5. Task Identification
Commenters said recommended ETOPS-specific tasks should be clearly defined for two-engine airplanes, but not for three- and four-engine airplanes. The FAA agrees with these comments and has removed this requirement along with all ETOPS **maintenance** program elements for airplanes with more than two engines
6. Configuration **Maintenance** and Procedures (CMP) Document
IATA, FedEx, KLM and others directed comments toward the certificate holder's requirement to have a ``system to ensure compliance with...part of a CMP because not all
ETOPS airplanes will have a CMP. Rather, the list should be contained in the certificate holder's ETOPS **Maintenance** Document.
IATA, Boeing, FedEx and KLM commented that since there are no CMP documents for three- and four-engine aircraft, there is no parts control...

...industry well. ATA had the same comment for procedural changes. The FAA agrees with these comments and has removed this requirement along with all ETOPS **maintenance** program elements for airplanes with more than two engines
D. Operator Reporting Requirements
The final rule includes certain proactive safety requirements to prevent the occurrence...

...requirements on operators of airplanes with more than two engines, we have removed the reliability program requirement, including IFSD rate reporting, along with all ETOPS **maintenance** program elements for airplanes with more than two engines.
United and Continental discussed the **maintenance** reporting requirements in Sec. 121.374 with American requesting withdrawal of the requirements, believing it is redundant to Sec. 121.703. During ARAC meetings, there...

...safety of an ETOPS flight, regardless of whether it occurs in the air or on the ground. Since
[[Page 1838]]
we have decided against imposing **maintenance** requirements on operators using airplanes with more than two engines, this reporting requirement does not apply to those operations.
Responding to requests by ATA, Continental...

...IATA. The key intent of
the program is to discover mechanical failures on ETOPS airplanes so
they can be appropriately addressed in the operator's **maintenance**
program.
United and Continental disputed the 72-hour reporting requirement,
asserting that it does not allow enough time for an operator to
determine the cause...

...associated with ETOPS. The FAA understands many ETOPS diversions are
for reasons other than mechanical failures. The certificate holder
needs to identify in its ETOPS **maintenance** document, how these flights
will continue after a diversion for non-mechanical reasons, such as a
medical emergency.
XI. Operational Requirements (Part 121)
A. Route...only a very few, distinct areas of the world. More
importantly, these areas, which comprise the South Pacific between the
west coast of the United **States** and Australia, the South Atlantic and
South Polar region, are indicative of demanding operations over remote
areas with minimal operational infrastructure. In the case of...
...airport may be designated as an ETOPS alternate for that
flight. The FAA agrees that the proposed definition was unclear and has
amended it to **state** that an alternate airport must meet the
requirements of Sec. 121.97. A certificate holder must comply with
Sec. 121.97 for each airport it...for
Category II and III approaches, as well as single or separate runway
criteria.

23
PROB40 is the probability of 40%. TEMPO is a temporary
condition .

ATA and Fed Ex also commented that the ARAC recommended the
consideration of the use of GPS/RNAV. Singapore, IATA, and United
recommended that GPS...

...may be quite normal and usable en
route. This commenter suggested the language should reflect an operator
looking at ``expected field conditions'' instead of ``filed **condition**
reports.'' The FAA does not agree, and the final rule keeps the NPRM
language. The agency's intent is to direct the operator to use specific
field **condition** reports to determine actual conditions at an airport.
It is not the FAA's intent to preclude an operator from using an
airport assumed to...for the safety and comfort of passengers for a short
period of
time. However, in a diversion, advanced planning should dictate there
would be sufficient **availability** of facilities for the protection of
passengers and crew. A plan depending on long-term use of the airplane
hull to protect passengers and crew from the elements is not considered
acceptable.
The FAA proposed to clarify the ``public protection'' requirement
of Sec. 121.97 to include data showing the **availability** of facilities
at each airport or in the immediate area sufficient to protect the
passengers and crew from the elements and to see to their...without the
knowledge of the operator, or that an airport may be unable to inform
operators of downgrades because of lack of authority from the **State**
Civil Aviation Authority. Qantas noted GPS or Required Navigation

Performance (RNP) approaches would make landing much safer, yet no requirements for these approaches appear in ...when used in free text message form. The use of data link (both HF and SATCOM) is limited by message length and ability to clearly **state** the issue or message, and tasks the flight crew more than voice communication by requiring full attention to the task of interacting with a small...

...for the flight.

Omni commented that the proposal does not meet its intended safety purpose: it requires an operator to structure its operations around the **availability** of SATCOM rather than more sophisticated communications systems. Moreover, this commenter and Airbus found the FAA did not clearly define ``landline fidelity'' in quantifiable terms...

...The communication benefits are clear.

The words selected in the rule ``of landline telephone-fidelity'' are to convey to the average person in the United **States** the communication qualities expected. A person knowledgeable of the communication qualities of SATCOM understands the equivalent relationship in comparison to landline telephone fidelity. The quantifiable term ``landline telephone-fidelity'' is in reference to the experience one would have using the telephone system in the United **States** . The FAA disagrees with the comment that the rule would require operators to structure its operations around the **availability** of SATCOM before considering alternatives. The rule language does not restrict operations based on the **availability** of satellite based voice communication.

Airbus, IATA and FedEx commented that although operators may initially ensure communication infrastructures, demonstrating the reliability and response time to...rule requires wind to be considered for ETOPS beyond 180 minutes to ensure that system time limits are not exceeded. Since data has shown the **likelihood** of a simultaneous engine **failure** and cargo fire to be extremely remote, for ETOPS beyond 180 minutes, the cargo fire suppression system requirement is based on an all engine operating...cargo suppression requirements be revised to apply only to airplanes that do not incorporate procedures for fire suppression through oxygen starvation. This section should clearly **state** that its provisions apply only to Class C cargo compartments. Boeing, IATA, and many operators make similar comments. Northwest comments that since the majority of...

...the most time-limited system, which has historically been the cargo fire suppression system. During ETOPS ARAC discussions material was presented to show that the **probability** of an engine **failure** and a simultaneous cargo fire both occurring at the most critical point in flight was extremely improbable. This analysis supported the decision to separate diversion... and is now required in ETOPS. They have requested clarification. To clarify, the intent to include icing in Sec. 121.646(a) is to clearly **state** that the fuel required to operate engine and wing anti-ice systems as well (as to account for the induced drag from ice accumulation on...

...it has enough fuel * * *''. The intent

with this change remains the same in that if icing conditions are expected, then the fuel requirements for this **condition** need to be accounted for in the fuel calculation.

FedEx, Singapore, IATA, and Japan Airlines commented that the rationale for adopting a 90-minute threshold...flag operations. It must contain information on the flight, list the airports to be used by the flight including alternates, and contain pertinent weather and **maintenance** information. It must be signed by both the pilot and dispatcher.

Qantas commented that this requirement is unnecessary, arguing the pilot already knows of the...

...s approved ETOPS authority, but also the status of the airplane and its equipment to meet those standards. The dispatch and flight planning personnel, the **maintenance** personnel, and the flight crew must all be aware of what is required for the flight so that last minute adjustments or decisions are correctly...the ARAC tasking and is beyond the scope of this
rulemaking. The success of past ETOPS shows the importance of the operator's continued airworthiness **maintenance** program that is a requirement for all ETOPS authority levels. We therefore do not accept the recommendation that the ETOPS threshold for two-engine airplanes...

...criteria include
certification requirements for the airplane-engine combination, requirements for en-route flight planning to ETOPS alternate airports based on system limitations, an ETOPS **maintenance** program and certain system and MEL requirements.

FedEx, IATA, and KLM noted that adding three- and four-engine airplanes to ETOPS will add **maintenance** and other training requirements for these
[[Page 1849]]
airplanes. The FAA agrees in part to the comment regarding possible additional training for employees. The FAA strongly believes that all operators would benefit from an ETOPS **maintenance** program. However, the FAA agrees with many of the commenters that the cost of implementing this new requirement for airplanes with more than two engines...
...this cost cannot be justified
based on the current level of safety achieved by the combination of engine reliability and the engine redundancy of this **fleet** of **airplanes** . Therefore, the requirement for an ETOPS **maintenance** program for airplanes with more than two engines in ETOPS has been withdrawn. The remaining costs have been calculated and are presented in the final...
180
minutes flying time (at the one-engine inoperative cruise speed under standard conditions in still air) from an adequate airport outside the continental United **States** unless the operation is approved by the FAA in accordance with Appendix G of this part, Extended Operations (ETOPS). The FAA has revised the part...

...with
part 121 operations to exclude all-cargo operations on airplanes with more than two engines from the ETOPS requirements and has limited the ETOPS **maintenance** program requirements to two-engine ETOPS airplanes. Appendix G defines ETOPS requirements for such things as operator experience, airplane certification, operational procedures and training of personnel. New language has been added to Sec. 135.411 that

requires two-engine airplanes used in ETOPS to conform to the additional **maintenance** requirements of the same Appendix G.
    Airbus commented that currently part 135 operators do not need approval for ETOPS flights since the current ETOPS operations...

...West Coast of the U.S. to Australia. NBAA commented that the primary cost for operations with airplanes that meet the ETOPS requirements will be **maintenance** -related.
    The FAA acknowledges that this rule imposes new requirements on part 135 operations. However, along with ARAC, the FAA has determined that part 135...

...on part 121 ETOPS. The FAA agrees that a major cost of implementing an ETOPS program is the cost to develop and apply an ETOPS **maintenance** program. The FAA has determined that based on the probability of critical loss of thrust for two-engine airplanes the cost of an ETOPS **maintenance** program is justified. However, because of the combination of current engine reliability and engine redundancy, the FAA has decided against adopting an ETOPS **maintenance** requirement for airplanes with more than two engines.
    The Final Regulatory Evaluation assesses the cost of the rule for part 135 operators as new costs...occur separately in determining necessary fuel reserves. The regulatory standard required by the ICAO Annex 6 is for a threshold to be established by the **State** that clearly defines when ETOPS requirements and standards take effect for all two-engine airplanes. Section 135.364 establishes that threshold and is consistent with...

...on this matter. The wording is such that consideration by users is not necessary until flights are planned that are outside of the continental United **States** .

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 Equi-Time Point is a point on the route of flight where the flight time, considering wind, to each of two selected airports is...ETOPS until 1 year following the publication of the final rule.
    Part 135, Appendix G, Definitions.
    The FAA proposed definitions for ETOPS and ETOPS dual **maintenance** . For this final rule, the definition of ETOPS Alternate Airport and ETOPS Entry Point have been added for clarification, while limitations on dual **maintenance** are now specified rather than defined. For part 135, any passenger-carrying operation outside the continental United **States** more than 180 minutes flying time (in still air at normal cruise speed with one engine inoperative) from an airport is considered ETOPS. This operation...

...a restriction on airplanes with more than two engines is unnecessary. NBAA stated it would support some limited additional requirement, such as limitations on dual **maintenance** for ETOPS critical components, to allow approval beyond 240-minute operations.
    The FAA ...years after the effective date of this rule do not have to comply with the airworthiness requirements of this rule.
    NATA requested the regulation specifically **state** how the 180-minute distance is calculated once ETOPS speeds are available. For example,

the preamble stated the ETOPS threshold is based on ``a single-engine inoperative speed in still air and standard conditions''; Appendix G fails to **state** the standard conditions and only ``still air'' is indicated.

Calculations made to determine the distance represented by 180 minutes should use standard conditions and still...not be practical, and may give some operators an
economic advantage. FedEx found while the dispatch requirements may be reasonable, other ETOPS requirements, such as **maintenance** and reporting, should not be an issue for three- and four-engine airplanes operating in the Polar region today.

The Polar policy letter already requires...

...standards whenever a route is
flown and a portion of the route traverses this area. The FAA proposed that, except for intrastate operations within the **State** of Alaska, any operations in the region north of 78[deg] N latitude, designated as Polar, must be authorized by the Administrator and have certain the updated weather
forecast for the expected time of use, if available. In addition, field **condition** reports should be obtained. The pilot will need to evaluate this information to determine that the weather minimums required for the instrument approach can be...

...add
another criterion for determining the size of the ice shapes simulated during certification testing. The ETOPS environment will not necessarily be the most critical **condition** for the maximum ice accumulation. An applicant will determine the maximum ice accretion on an airplane during an ETOPS diversion and compare that to the...for ETOPS. ETOPS requires that the airplane must be equipped with at least three independent sources of electrical power. For airplanes that must use the **availability** of the APU to satisfy this requirement, an APU in-flight start and run program is required. Since current models of the 747-400 satisfy...

...not
include any costs related to the APU requirement.

Boeing proposed changing the requirements to obtain certification for a two-engine airplane for ETOPS to **state** that a flight test must be conducted to validate the adequacy of the airplane's flying qualities, performance and the flight crew's ability to...

...wing inspections in accordance with
the tasks defined in the Instructions for Continued Airworthiness required by Sec. 25.1529 to establish the ETOPS significant system **condition** for continued safe operation. The engines must also undergo a gas path inspection. These inspections must identify abnormal conditions that could result in an in...

...consumption, a fixed monthly fee, and a variable usage charge. The FAA estimated that revenues derived from passenger use of the SATCOM capabilities or improved **maintenance** procedures made possible by the new system would offset the variable usage fee. The annual operating costs per unit were estimated at approximately $2,500...stated the additional costs to
upgrade the capabilities of an aerodrome, including the cost of

training additional personnel, are not one that a municipality or **State** will entertain willingly on the off chance that an aircraft might divert there. It is entirely conceivable that carriers like Omni will be compelled to Fuel reserve training is estimated at $200,000 and passenger recovery training is estimated at $100,000 for a **fleet** of six **aircraft** . In addition, three- and four-engine aircraft operators would have to undergo a full process of operational assessment and approval including an assessment of their...

...500,000 per applicant based on data from former ETOPS assessments. Three- and four-engine aircraft operators would have to train their flight crew, dispatchers, **maintenance** personnel and cabin crew to the entire extent of the operation and **maintenance** rules instead of just to the modified elements. The overall cost for a fleet of six four-engine aircraft of one type is estimated at...

...engines becoming inoperative. The new requirement for ETOPS en-route alternate airports does not constitute a big impact; the final regulatory evaluation includes a per **flight** charge to account for this **task** . Existing regulations require fuel reserves. The commenter has not shown how the incremental cost of the new passenger recovery training requirements will be $100,000...

...and creates the most efficient operations. Experience with other rules in part 121 provide evidence that operators do not train every flight crewmember and every **maintenance** person on every new rule. However, we cannot determine that only four airplanes and five mechanics per airplane used in the initial economic assessment accurately...

...to protect that diversion. We do however agree that for airplanes with more than two engines, passenger carrying operations may be excluded from the ETOPS **maintenance** program requirements and that all-cargo operations may be excluded from all ETOPS requirements.

The concept of precluding and protecting the diversion has equal validity...

...of airplanes with two-or-more engines will enhance the safety of their operations and benefit the industry.

Section 121.374 sets forth the ETOPS **maintenance** elements: CMP; CAMP; monitoring of propulsion system, engine **condition** , and oil consumption; APU in-flight start program; **maintenance** training; and procedural changes approval. While many of these elements are a normal part of an operator's **maintenance** program, some may need to be supplemented in consideration of the special requirements of ETOPS. Airbus commented that these additions would require that operators engaged in any of the ETOPS operations covered in Appendix P of part 121 apply all ETOPS **maintenance** elements. The FAA acknowledges possible confusion regarding the **maintenance** elements required in appendix P. Section 121.374 has been amended. An operator's **maintenance** program for all two-engine ETOPS airplanes, regardless of diversion time, must comply with Sec. 121.374. An operator of three- and four-engine airplanes operating beyond 180 minutes will not be required to have an

ETOPS **maintenance** program.
FedEx noted three- and four-engine aircraft, pursuant to the provisions of a CMP, do not have parts and systems that must be equipped aircraft parts
and systems) as a one-time cost of $4,962,000. The development of ETOPS parts Control Programs, **maintenance** training, creation of centralized **maintenance** control system, additional parts inventory, performance of pre-departure service checks and other Sec. 121.374 programs would be $17,033,000 as a one...

...in parts 21, 25, and 33.
Most likely the existing IPC program will satisfy the ETOPS parts control needs. Most airlines already have a centralized **maintenance** control program and if they do not it will require minimal cost to establish and the operator has a year to accomplish it. The FAA...

...When the FAA approval time is factored in development time would be 14 weeks. The FAA has provided a 1-year period to implement the **maintenance** requirements. The FAA also estimated the continuing costs of several elements of the CAMP program. A pre-departure check was estimated to take two staff...

...none of the incidents cited in
the proposal risk analysis. The FAA has agreed to withdraw this requirement and all other elements of the ETOPS **maintenance** program for airplanes with more than two engines in ETOPS.
FedEx commented that it agrees with the additional training for passenger recovery training for crewmembers...
...operations in the polar areas in the
final regulatory evaluation.
Several carriers including Atlas Air, Omni International, FedEx, and UPS included aggregate costs of training **maintenance** , crewmembers, flight attendants, dispatchers, and other operational personnel covering all or significant portions of their fleets.
The FAA in this final regulatory evaluation has estimated the cost of training all **maintenance** personnel, all dispatchers, all international pilots and flight attendants, and included all or significant portions of operators fleets that have operation specifications for affected areas...of proof in this case and therefore there is no
additional paperwork or associated cost.
Part 135 operators will have to comply with the continuous **maintenance** program and the requirements of Appendix G if the operations use two-engine airplanes. NetJets stated the cost/benefit analysis does not adequately address the added costs of maintaining ``9 passenger seat or less'' aircraft under a continuous **maintenance** program currently required for aircraft with ``10 or more'' passenger seats. These costs not only include the actual development and approval of the program, but the added costs associated with maintaining personnel for the program. Also, the ``dual **maintenance** '' requirement will mandate that more **maintenance** technicians be made
[[Page 1858]]
available for **maintenance** conducted on ETOPS aircraft. This cost is not addressed in the cost/benefit analysis.
The FAA's database indicates that only 37 operators have aircraft that currently meet the aircraft requirements but do not meet the **maintenance** provisions for aircraft type certificated for 10 or more

seats that is a requirement for operations beyond 180 minutes. None are authorized for operations in...

...these operators can continue to fly non-ETOPS international routes and therefore will not incur ETOPS-related costs. Also the FAA has eliminated the ETOPS **maintenance** requirements for ETOPS on passenger-carrying airplanes with more than two engines.

ETOPS flights beyond 180 minutes but planned to remain within 240 minutes have, in addition to the **maintenance** requirements, certain planning, operational, experience, and equipment requirements. Dassault commented that the check required immediately before a flight and certified by an ETOPS qualified **maintenance** person is unrealistic for part 135 operators who do not fly ETOPS routes on a regular basis.

The FAA disagrees that a pre-departure service check is unrealistic for 135 operators. Part 135 operators are already required to have procedures in place to ensure that **maintenance** is performed by properly qualified **maintenance** personnel. Allowing a pilot to perform a pre-departure service check degrades the importance of the check and places a safety critical task below the...

...those aircraft will be directly impacted by this proposed rule. The most significant impact is for operations conducted between the west coast of the United **States** and Hawaii. In 2003, they conducted more than 760 flights to and from Hawaii and the contiguous U.S. At the present pace, more than...

...that over the 10-year period following adoption of the proposed rule, 21,420 flights would be eliminated. Actus Aviation stated that residents of the **state** of Hawaii rely on long-range air ambulance flights to transport them to the mainland where more advanced critical medical treatment is available. Currently part...

...specifications between the effective date of the rule and 8 years later, contained in the NPRM, have been deleted.

NetJets was also concerned that all **maintenance** personnel performing **maintenance** on ETOPS aircraft must be trained in accordance with the certificate holder's ETOPS **maintenance** training program. The vast majority of **maintenance** work for part 135 operators is conducted by repair stations and/or manufacturer service centers, which places a substantial training burden on the certificate holder. Coupled with the fact that all manual changes would require approval before adoption, NetJets asserted that a very ponderous **maintenance** requirement is being proposed.

The FAA finds that the operator is already required to train persons performing preventative **maintenance** functions in accordance with Sec. 135.433. The amount of additional burden for ETOPS-specific training depends on the type of training program the operator chooses to incorporate. The FAA has limited the ETOPS **maintenance** requirements to only two-engine operations in part 135.

TriCoastal Air, a part 135 on-demand air cargo carrier, stated that the two Lear 35As...

...changes on small entities.
Third, the Trade Agreements Act prohibits agencies from setting standards that create unnecessary obstacles to the foreign commerce of the United **States** . In developing U.S. standards, this Trade Act also

requires agencies to consider international standards and, where appropriate, use them as the basis of U...
...assessment of the costs, benefits, and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by **State** , local, or tribal
[[Page 1859]]
governments, in the ...S. operators at a significant competitive disadvantage to foreign operators of three- and four-engine airplanes; and (4) does not impose an unfunded mandate on **state** , local, or tribal governments, or on the private sector. These analyses, available in the final regulatory evaluation supporting today's rule, are summarized below.
Total...will cost $1.4 million or $800,000, present value. This will consist of design and certification costs of $1.0 million and establishing engine **condition** monitoring procedures at a cost of $375,000. The total cost to a business aircraft manufacturer for reporting and investigation, and airframe and engine certification...

...will not have a significant economic impact on a substantial number of airframe and engine manufacturers or part 121 and part 135 operators. All United **States** manufacturers of transport category airplanes exceed the Small Business Administration small entity criteria of 1,500 employees for aircraft manufacturers. Those U.S. manufacturers include: Boeing, Cessna, Gulfstream, Lockheed Martin, McDonnell Douglas, Raytheon, and Sabreliner. All United **States** manufacturers of ETOPS-capable engines exceed the Small Business Administration small entity criteria of 1,000 employees for aircraft engine manufacturers. Those U.S. manufacturers include: General Electric, Pratt and Whitney, and Rolls Royce. All United **States** operators of transport category airplanes that are currently authorized to conduct 180-minute ETOPS operations exceed the Small Business 0Administration small entity criteria of 1 Delta, United, and U.S. Airways.
All United **States** operators of transport category airplanes that are currently authorized to conduct 180-minute ETOPS operations exceed the Small Business Administration small entity criteria of 1...

...of 1979 prohibits Federal agencies from establishing any standards or engaging in related activities that create unnecessary obstacles to the foreign commerce of the United **States** . Legitimate domestic objectives, such as safety, are not considered unnecessary obstacles. The statute also requires consideration of international standards and, where appropriate, that they be...

...similar aviation regulations. The requirements imposed on both domestic and foreign airframe and engine manufacturers create no obstacles to the foreign commerce of the United **States** .
Unfunded Mandates Assessment
The Unfunded Mandates Reform Act of 1995 (the Act) is intended, among other things, to curb the practice of imposing unfunded Federal mandates on **State** , local, and tribal governments. Title II of the Act requires each Federal agency to prepare a written statement assessing the effects of any Federal mandate...

...proposed or final agency rule

that may result in an expenditure of $100 million or more (adjusted annually for inflation) in any one year by **State** , local, and tribal governments, in the aggregate, or by the private sector; such a mandate is deemed to be a ``significant regulatory action.'' The FAA...

...of 1979 prohibits Federal agencies
from establishing any standards or engaging in related activities that create unnecessary obstacles to the foreign commerce of the United **States** . Legitimate domestic objectives, such as safety, are not considered unnecessary obstacles. The statute also requires consideration of international standards and, where appropriate, that they be...

...similar
aviation regulations. The requirements imposed on both domestic and foreign airframe and engine manufacturers create no obstacles to the foreign commerce of the United **States** .
This final rule does not contain such a mandate. The requirements of Title II do not apply.
Executive Order 13132, Federalism
The FAA has analyzed...

...rule under the principles and
criteria of Executive Order 13132, Federalism. We determined that this action will not have a substantial direct effect on the **States** , or the relationship between the national Government and the **States** , or on the distribution of power and responsibilities among the various levels of government, and therefore does not have federalism implications.
International Compatibility
In keeping...180 minutes) New ETOPS rules would
regulation. regulation.
regulation. New requirement: Fuel apply to
passenger-

for depressurization. carrying operations

only. Airport

specific PRP. No

ETOPS **maintenance**

program.
Part 135..... No current No current No
current No change..... No change..... New ETOPS rules
would
regulation. regulation.
regulation. apply.
All-cargo

airplanes with more

than two engines

excluded. PRP in

North Polar region

only. No ETOPS

maintenance program

for airplanes with

more than two

engines.

--

PRP = passenger recovery plan.

* a. Fuel requirements for icing and wind calculations in the critical fuel scenario...

...plan..... 1 year..... 1 year.

121.161 Airplane limitations..... 30 days..... 1 year.

121.162 ETOPS Type Design Approval..... 30 days..... 8 years.

121.374 **Maintenance** ..... 30 days..... Not required.

121.415 Crew training..... 1 year..... 1 year.

121.565 Reporting--engine inoperative 30 days..... 30 days.

landing.

121.624 ETOPS...44701.

0

2. Amend Sec. 1.1 by adding the following definitions in alphabetical order to read as follows:

Sec. 1.1 General definitions.

* * * * *

Configuration, **Maintenance** , and Procedures (CMP) document means a document approved by the FAA that contains minimum configuration, operating, and **maintenance** requirements, hardware life-limits, and Master Minimum Equipment List (MMEL) constraints necessary for an airplane-engine combination to meet ETOPS type design approval requirements.

* * * * *

Early...

2/3,K/9 (Item 1 from file: 994)

DIALOG(R)File 994:NewsRoom 2005

0971111356 16UQ3ERV

Economic regulations: Aviation traffic data; collection processing and reporting requirements

RegAlert

Thursday, February 17, 2005

JOURNAL CODE: GDGC LANGUAGE: English RECORD TYPE: Fulltext

DOCUMENT TYPE: Trade Journal

WORD COUNT: 66,531

TEXT:
State : FD
Action: Notice of proposed rulemaking (NPRM).
Department: Transportation Department
Citation:

FR Doc 05-2861
[Federal Register: February 17, 2005 (Volume 70, Number 32)]
[Proposed...are reached promptly to make it easier to adapt the air transportation system to the present and future needs of the commerce of the United **States** '';
(9) ``Preventing unfair, deceptive, predatory, or anticompetitive practices in air transportation'';
(10) ``Avoiding unreasonable industry concentration, excessive market domination, monopoly powers, and other conditions that...

...strengthening of small air carriers to ensure a more effective and competitive airline industry''; and
(16) ``Ensuring that consumers in all regions of the United **States** , including those in small communities and rural and remote areas, have access to affordable, regularly scheduled air service'';
As a base of information to assess...citizens are not. Lack of consistent
Foreign Air Carrier statistics hinders BLS' ability to keep its published statistics accurate and effective.
e. The Department of **State**
The Department of **State** (DOS) uses the Department's aviation data to provide the information base for policy decisions in international aviation negotiations.
f. The Government Accountability Office
The...
...Federal government's small airport subsidy to remain viable. The OandD Survey is the primary source of destination information available to small airports.
Airports and **state** aeronautical agencies use the data to understand their customers and the airport's role in its regional transportation market. Airports must ensure that Air Carriers...

...current OandD Survey reporting requirements, are particularly hampered by the lack of relevant aviation data.
c. Consumers and the General Public
Consumers benefit from the **availability** and analyses of accurate and complete aviation data. In the past, the Department received numerous inquiries from the public regarding domestic airline fares. In response...that are insufficiently comprehensive and detailed. The continuation of collecting insufficient, quarterly data to measure the transportation industry will severely hamper the ability of Federal, **state** , and local governments to provide the infrastructure to allow the airline industry to contribute to economic growth. Decisions on aviation infrastructure worth billions of dollars...undertake. The only other government entities in a position to gather traffic statistics are the nation's airports. Airports are operated by a variety of **State** ,

Municipal, County and Regional authorities. Collectively, they do not have the resources to process statistics on all of the passengers flowing through them on a...of substantial changes in airline ticketing and revenue accounting practices, this alternative is the most efficient and cost effective, allowing for the broadest possible data **availability** with a minimum of ongoing reporting effort.

b. Data To Be Collected

The Department believes that a fundamental restructuring of the data collected under the...s complete itinerary, denominated in U.S. dollars, and accurate to two decimal places, rounded. The Fare Amount excludes taxes and fees imposed by Federal, **state** , local and foreign governments and excess baggage fees.

5. Government Taxes and Fees. a. Government Imposed Tax/Fee Identifier. The government tax or fee identifier...help it calculate a more meaningful ATPI. The Department is considering collecting passenger type as a data element and, therefore, we seek comment on the **availability** of passenger information, the consistency with which it is populated in airline systems proposed as the source for OandD Survey data in this rulemaking, and...between the passenger and the Carrier, or one of its agents, takes place. Adopting a new source of data necessarily means that we accept the **state** of the data as it existed when that data source was created or introduce a procedure to report subsequent changes to the itinerary.

For an...under-reporting of travel, but the extent to which that would happen is unmeasurable, leaving the ratio of reservations to tickets sold in a constant **state** of statistical instability. In addition, the level of over-or under-reporting may disproportionately affect different types of markets (e.g., predominantly leisure versus predominantly...29,000 passengers. The fourth quarter 2003 OandD Survey measured 94,347,000 Directional OandD passengers accommodated on 31,385 routes in the 48 contiguous **states** in that quarter. Of the 31,385 routes, 754 (2.4 percent) had 29,000 or more passengers in the quarter. This means that the...

...in passengers with 95 percent confidence from quarter to quarter on only 2.4 percent of the total number of routes in the 48 contiguous **states** .

When researching a market with multiple airlines, the minimum number of passengers must exceed 29,000 on each airline in order for the research to...

...routes wherein all the Carriers are transporting 29,000 passengers. These 754 routes accounted for more than half the total passengers traveling between the 48 **states** in that quarter, but the Department's mandate to adapt the air transportation system to the present and future needs of commerce requires the study...sampling, subject to comments from the industry and the public regarding the suitability of continuing to use a sample. The Department's data collection guidelines **state** that data collection of 100 percent of the population of inferences is the most accurate approach, but that the cost of collection and other resource...over time is problematic for both the Carrier concerned and the users of the OandD Survey. Therefore, we propose that (1) Carriers flying strictly intra- **state** service, (2) Carriers flying no aircraft with 15 or more seats, (3) non-scheduled air taxi service, and

(4) non-scheduled helicopter service will continue...they issue for travel to and from, and within, the
U.S. The Foreign Air Carriers required to report their issued Ticketed Itineraries as a **condition** of immunity with a U.S. Air Carrier partner have complied with this requirement and managed to adapt accordingly. The new system, designed specifically to...data must necessarily be collected over the
length of time each Carrier allows for advance purchase. For example, Carriers with a four-month advance purchase **availability** , or booking window, would provide full test data for the four months to accumulate a full set of passenger data for the Department to test...written assessment of
the costs, benefits, and other effects of proposed or final rules that include a Federal mandate likely to result in expenditures by **State** , local, or tribal governments, in the aggregate, or by the private sector, of more than $100 million annually.

The proposed changes to the OandD Survey and the changes we are considering making to the T-100 would not result in expenditures by **State** , local, or tribal governments because no such government operates a Carrier subject to the proposed regulation. While the proposed changes to the OandD Survey and...

...more or adversely affect, in a material way, the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or **State** , local, or tribal governments or communities. Regulatory actions are also considered significant if they are likely to create a serious inconsistency or interfere with the...in higher present value costs. However, the benefits to
Participating Carriers and Reporting Carriers, as well as to the Department, Federal agencies, airports, consultants, academics, **State** and local transportation planners, other **State** and local agencies, consumers, and other stakeholders, are significant and immediately available (See Sections L.3.d.2. and L.3.e.2.). Because these...S. to increase its investment in
research and development to revitalize the aviation industry as well as to improve aviation information collection. Section 805(a) **states** that, if the Secretary requires Carriers to provide flight-specific information, the Department will not: (1) Make public the flight-specific fare information until at...are for West
Virginia, they are the most recent wages established by the government and are comparable, in the past, to rates assigned to other **states** and districts. We believe that they represent an accurate estimate of wages for this set of positions, effective in 2004. Furthermore, we do adjust the...air carriers' access to this critical information. Furthermore, in their responses to the ANPRM, a number of Carriers recommended more timely reporting and more frequent **availability** of the data.

Carriers rely not only on timely data but also on detailed information to create more efficient and competitive markets, as well as...effectively plan airport staffing requirements.
The identification of passengers as traveling through an airport versus deplaning and remaining will support airport facility planning.
[[Page 8187]]
State and local transportation planners could also use this information for planning purposes.

Periodically, the Department has requested special data submissions

from Carriers because national economic...are for West Virginia, they are the most recent wages established by the government and are comparable, in the past, to rates assigned to other **states** and districts. We believe that they represent an accurate estimate of wages for this set of positions, effective in 2004. Furthermore, we do adjust the...Our new rules would also benefit most Carriers because, within confidentiality constraints, all Carriers will have access to data that accurately and completely reflect the **state** of the airline industry, including traffic and operating data. More timely data submission (by carriers) and data dissemination (by the Department) will enhance the usefulness...since they are more likely to be affected by the current reporting threshold. Therefore, we propose that (1) carriers only flying planes within a single **state** , (2) carriers flying no aircraft with 15 or more seats, (3) non-scheduled air taxi services, and (4) non-scheduled helicopter carriers will continue to...information to strengthen decision making, accountability, and openness in government and society; (4) minimization of the cost to the Federal government of the creation, collection, **maintenance** , use, dissemination, and disposition of information; and (5) providing for the dissemination of public information on a timely basis, on equitable terms, and in a...

...S. Air Carriers.....
13,068 10,164
World Airline Industry.....
24,840 19,320

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a. OandD Survey
Agency: Office of the Secretary.
Title: Passenger Origin- **Destination** Survey Report.
Type of **Request** : Revision of a currently approved collection.
Affected Public: Businesses.
OMB Clearance Number (Current): 2139-0001 (expires 12/31/06).
OMB Clearance Number (Proposed): To be...with the principles and criteria contained in Executive Order 13132. We have determined that the proposed rule will have no substantial direct effects on the **States** , on the relationship between the
[[Page 8194]]
national government and the **States** , or on the distribution of power and responsibilities among the various levels of government. Therefore, we have determined that it does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment or to warrant consultations with **State** and local governments.

8. Executive Order 12630

Executive Order 12630, Government Actions and Interference with Constitutionally Protected Property Rights (53 FR 8859, March 15, 1998...of this document can be used to cross-reference this action with the Unified Agenda.

M. Glossary

1. Air Carrier. Any citizen of the United **States** who undertakes, whether directly or indirectly or by lease or any other arrangement to engage in air transportation.

2. Airline Designator. The two character airline...of the trip (origin) until the end of the trip (destination), where the individual intends to conduct business or engage in leisure activity.

41. United **States** . The **States** of the United **States** , the District

of
Columbia,
[[Page 8196]]
and the territories and possessions of the United **States** , including the
territorial sea and the overlying airspace.
List of Subjects
14 CFR Part 241
Air carriers, Reporting and recordkeeping requirements, Uniform
System of Accounts...and reported, as many times as
necessary, from Participating Carriers shall include the following
data elements repeated for each tax or fee imposed by local, **state** ,
and national government authorities in all countries that are
applicable to the Ticketed Itinerary:
a. Government-imposed tax/fee identifier: The identification
code of each...
?